

August 13, 1956

Contributions to RR Research—I . . . p. 38

RAILWAY AGE

WORKBOOK OF THE RAILWAYS

THE INDUSTRY'S ONLY WEEKLY NEWSMAGAZINE

CONTINUING PARTS IMPROVEMENT—

a never-ending program at Electro-Motive to
make General Motors Locomotives better year by year
—to give older General Motors Locomotives the bene-
fits of present day design and material developments.

**See the PARTS PROGRESS PRESENTATION
when it comes to your railroad—pages 26, 27**



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The Kershaw BALLAST CLEANER



Front view showing shoulder ballast being picked up, cleaned and returned to shoulder. Note machine working both sides of track.

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21-3 THROUGH 28-5

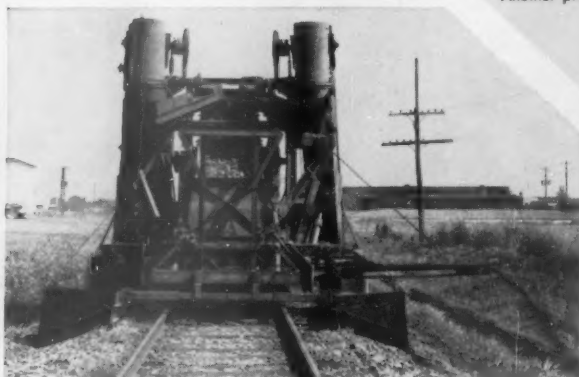
Kershaw Manufacturing Company proudly introduces the Kershaw Ballast Cleaner for spot cleaning of shoulder ballast without the use of work trains.

The machine will clean shoulder ballast in one pass, and at a rate of 1,200 feet-per-hour. It is provided with a set-off to allow trains to pass and is ideal for cleaning ballast in spots on your track. The machine also will scarify and regulate the shoulder between spots which need cleaning.

Kershaw's Ballast Cleaner is equipped with regulator wings and scarifying teeth. Shoulder ballast is picked up, screened to remove dirt and foreign material, and placed back on the track, either on the shoulder or in the track center as desired. The regulator wings then shape the ballast shoulder back to the desired section.

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Another progressive step by Kershaw!



Rear view showing vibrating screen cleaning ballast and ballast wing dressing cleaned ballast shoulder. Dirt removed from ballast is discharged on shoulder by conveyor belt.

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In One Pass
Without Work Train*

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MONTGOMERY



ALABAMA

Armco Buildings Do Variety of Jobs in New Yard

House Men, Materials and Machines

Pictured are only a few Armco Steel Buildings being used in a variety of applications in the Milpitas, California, yard of the Western Pacific Railroad.

There are good reasons why Armco Buildings are so well suited to many jobs. First, all-steel construction makes them noncombustible—an important safety feature. Also, they are weather-tight and durable. There is nothing to crack, warp or rot—so long service is assured with little or no maintenance. Write us for specific data and other important advantages of Armco Steel Buildings, Armco Drainage & Metal Products, Inc., 3496 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO
Steel Buildings

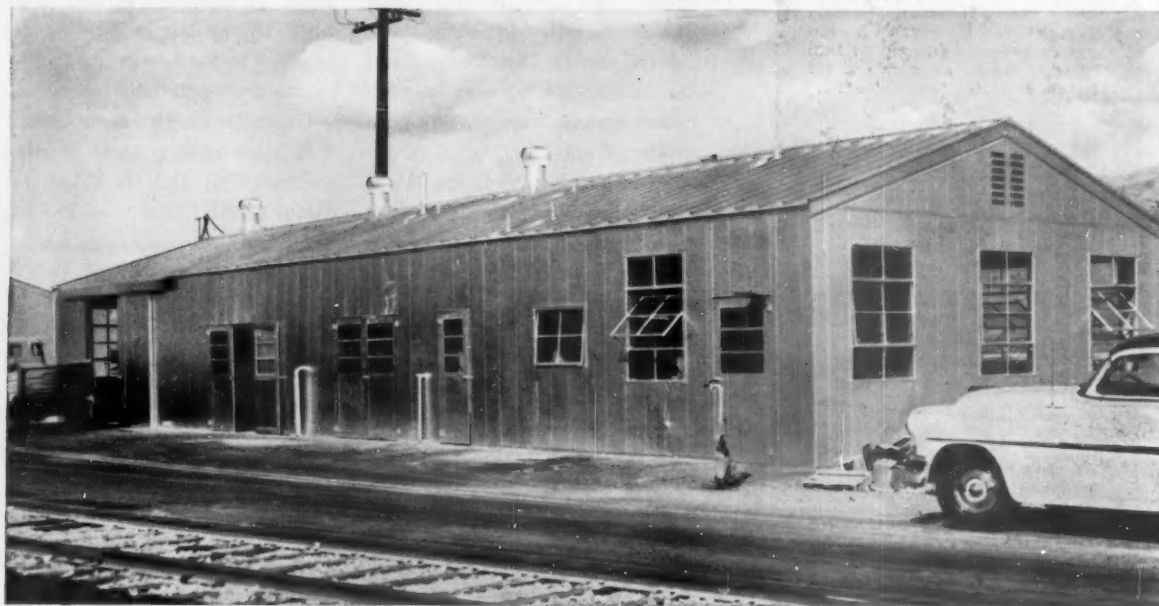


Mechanical Department Waste House is an Armco Steel Building, 12 feet wide, 16 feet long with 8-foot sidewalls.



Truck garage features up-folding doors. A wide range of door and window types and locations is available in Armco Buildings.

Combination office and shop is 24 feet wide. Standard clear-span widths of Armco Buildings range up to 60 feet.



Another Important Tool for RAILROAD AUTOMATION



The illustration shows a steam locomotive pulling a passenger car on tracks. To the left of the train is a wayside control station. The station has a rectangular control panel with a lever and a speaker. Below the panel is a larger box containing electronic equipment. The station is labeled 'CONTROL STATION' and 'UNION SWITCH & SIGNAL'.

To control train from wayside station. Operator turns top lever on locomotive control panel (rectangular box) to select running direction and the bottom lever for "stop," "neutral" and "run."

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Now another tool, the Type "CY" Inductive Cab Signal System, has been added to the ever growing list available to the railroads in their advance toward automatic operation to reduce costs and increase efficiency.

Although the Type "CY" equipment was developed primarily for cab signal service in classification yards, the inductive principles on which this system is based can be adapted to the remote control of locomotive operation.

Recently, on the New Haven R.R., this new system, in conjunction with UNION Automatic Speed Control, was used to control a train remotely from a wayside station.

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RAILWAY AGE

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Workbook of the Railways

Vol. 141, No. 7
August 13, 1956

CONTENTS and Week at a Glance

Doing something about the weather . . .

. . . more and more railroads are making use of air-conditioning in yard and office buildings as well as in areas where the air cooling-conscious public is dealt with. Added employee efficiency and morale, and public good will, are the benefits obtained. . . . p.7

"Utterly inadequate" . . .

. . . is the term used by the NIT League to describe the railroads' car program in a protest filed with the ICC against the proposed demurrage rate increases. . . . p.8

FORUM: Profitable passenger business . . .

. . . is more likely to come about when more attention is devoted to expense *reduction* and less to expense *allocation*. The forthcoming ICC investigation into the problem can be helpful if out of it comes a better public understanding of the facts of life, so far as the common carrier movement of people is concerned. This is the time to discover how the passenger business can be made to pay. . . . p.37

Contributions to railroad research . . .

. . . is the general topic which Railway Age is developing in a series of case histories showing how far off the beam is the idea that too many people have that the railroad industry is backward in technological research. First article in the series is . . .

. . . Casting for the future . . .

. . . in which the research activities of National Malleable & Steel Castings Co. are described. . . . p.38

Either way on either track . . .

. . . is the way the C&O dispatcher runs trains between Columbus and Toledo, thereby keeping heavy tonnage freights moving while allowing mechanized track gangs plenty of leeway for uninterrupted work. . . . p.43

BRIEFS

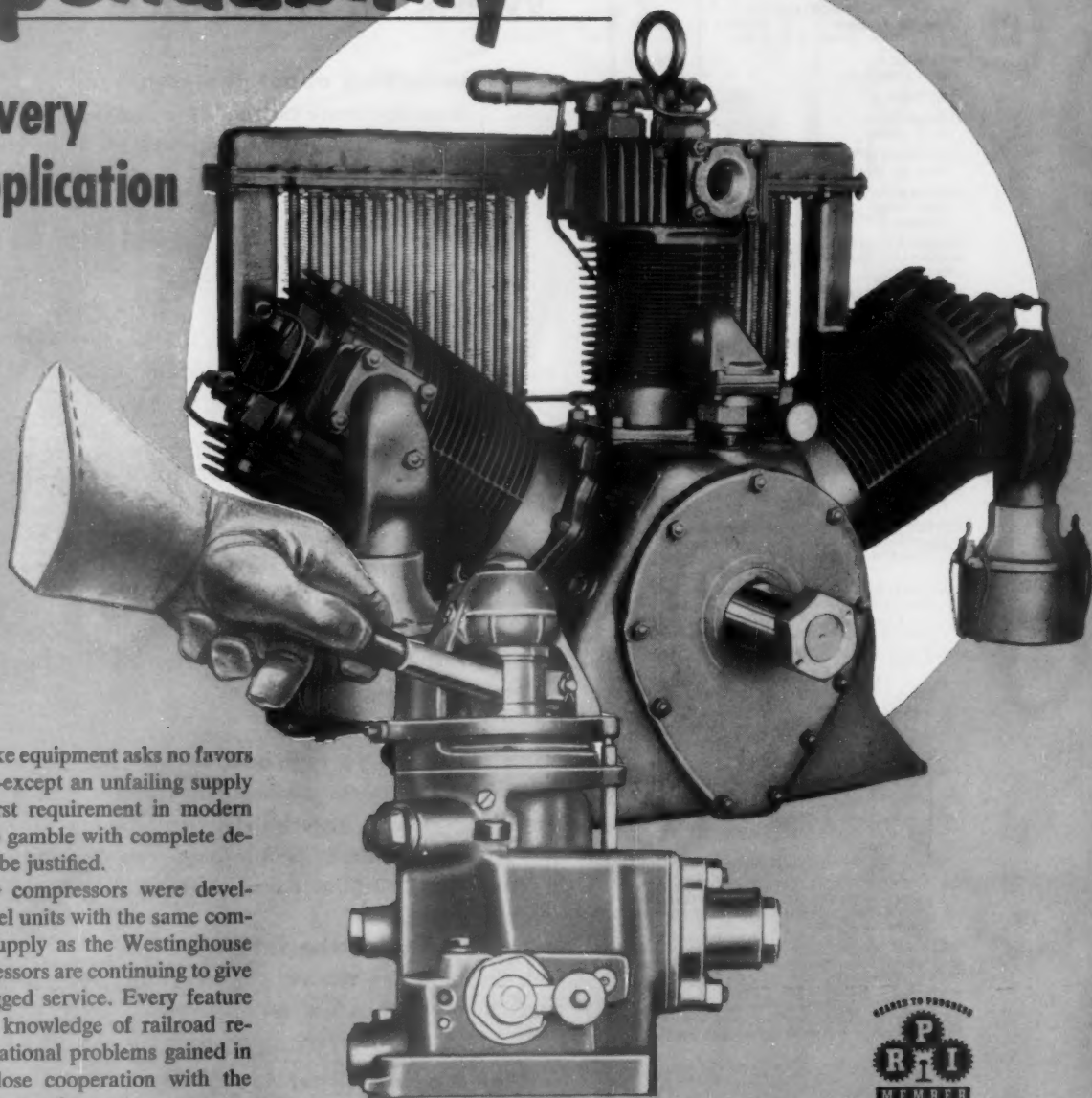
Dividend cut . . .

. . . is one outcome of the steel strike, so far as stockholders

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COMPANY**

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Current Statistics

Operating revenues, six months	
1956	\$5,293,274,781
1955	4,835,326,880
Operating expenses, six months	
1956	\$4,040,560,806
1955	3,654,220,154
Taxes six months	
1956	\$559,076,693
1955	523,450,895
Net railway operating income, six months	
1956	\$510,512,938
1955	530,456,895
Net income, estimated, six months	
1956	\$399,000,000
1955	416,000,000
Average price 20 railroad stocks	
August 7, 1956	103.60
August 9, 1955	91.75
Carloadings revenue freight	
Thirty weeks, 1956	21,323,995
Thirty weeks, 1955	20,895,558
Average daily freight car surplus	
Wk. ended Aug. 4, 1956 ..	25,944
Wk. ended Aug. 6, 1955 ..	4,854
Average daily freight car shortage	
Wk. ended Aug. 4, 1956 ..	5,254
Wk. ended Aug. 6, 1955 ..	14,891
Freight cars on order	
July 1, 1956	129,409
July 1, 1955	27,102
Freight cars delivered	
Six months, 1956	33,189
Six months, 1955	17,111
Average number railroad employees	
Mid-June 1956	1,074,979
Mid-June 1955	1,073,847

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PUBLICATIONS (A.B.P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.) AND IS INDEXED BY THE INDUSTRIAL ARTS INDEX, THE ENGINEERING INDEX SERVICE AND THE PUBLIC AFFAIRS INFORMATION SERVICE. RAILWAY AGE, ESTABLISHED IN 1856, INCORPORATES THE RAILWAY REVIEW, THE RAILROAD GAZETTE, AND THE RAILWAY AGE GAZETTE. NAME REGISTERED IN U. S. PATENT OFFICE AND TRADE MARK OFFICE IN CANADA.

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Week at a Glance CONTINUED

of the Pittsburgh & West Virginia are concerned. Meanwhile, pace-setters in the steel industry, free of government price regulation, already have announced a price increase calculated to offset the higher labor costs growing out of the strike settlement.

Green report forms . . .

. . . which passengers fill out are the means the New York Central is using to poll travelers on their impressions of the service, comfort and performance of the "Aerotrain" on its runs between Chicago and Cleveland.

April's capital expenditures . . .

. . . of the Class I railroads totaled \$108 million, up 73.6% from April 1955's \$62.3 million. Outlays for equipment, at \$77.5 million, were up 88.9%, and expenditures for road, at \$30.5 million, were up 43.9%. The four-months total for road and equipment was \$405.8 million, up 72.1% from the \$235.8 million reported for 1955's first four months.

Chicago's Union Station . . .

. . . has been mentioned as one of four possible sites for a new 31,000-ft exposition hall. The plan would utilize air rights over the train shed and station concourse.

\$43 million in local . . .

. . . real estate taxes were paid last year by the 15 railroads which operate in New York State. Heaviest local tax payment of the railroads went to New York City, where the bill was over \$20.5 million.

Hosts to the press . . .

. . . will be San Francisco's three terminal railroads during the Republican National Convention there August 20-23. Southern Pacific, Santa Fe and Western Pacific are co-sponsoring a "hospitality lounge" for newsmen at the Cow Palace. Roads at Chicago are sponsors of a similar facility at the International Amphitheater during the Democratic Convention in that city this week.

New Type Solid Bearing . . .

. . . 400 freight cars will soon be equipped with a 360-deg aluminum sleeve bearing made by Allison Division of General Motors. Cost is in the neighborhood of \$5 per bearing while oil consumption in one test was a quart in 60,000 miles.

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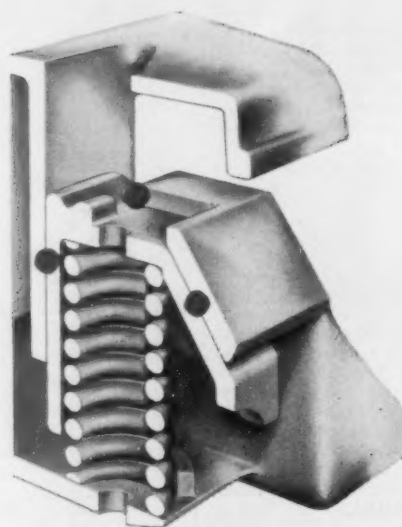
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TO BOOST MORALE AND PUBLIC FAVOR . . .

Railroads Go for More Air Cooling

The railroads are doing something about the weather.

"Our trains are air-conditioned," railroad engineering officers declare. "Why shouldn't we have air conditioning in our stations too?"

Going even farther, many of these engineering officers are convinced that, under some conditions, air cooling railroad buildings other than stations can be justified on the basis of improved morale and more personnel efficiency.

The growing public habit of patronizing places that are air-conditioned and avoiding those that are not is a factor that cannot be ignored when railroads plan new structures or remodel old ones, they insist.

Railroad architects and building engineers are mindful that air-conditioning has become almost a "must" for theaters, banks, supermarkets and department stores while air cooling in bus and air terminals is commonplace.

Selectivity the Rule—When it comes to air-conditioning office and other work space, the railroads are, of necessity, doing a selective job: installing air-conditioning first where the need is most pressing and getting around to less needy locations later.

In general, highest priority in this "which comes first?" procedure goes to dispatchers' offices and yardmasters' and hump-yard control towers, with the dispatcher being singled out because of his key position in the railroad operating picture. The heat load imposed on yard control towers enclosed in glass for visibility leads almost invariably to air-conditioning.

Heat from electronic tubes in communications and control equipment is another factor prompting more widespread use of air-conditioning—a procedure simplified by the availa-

bility of room-type cooling units suitable for small offices.

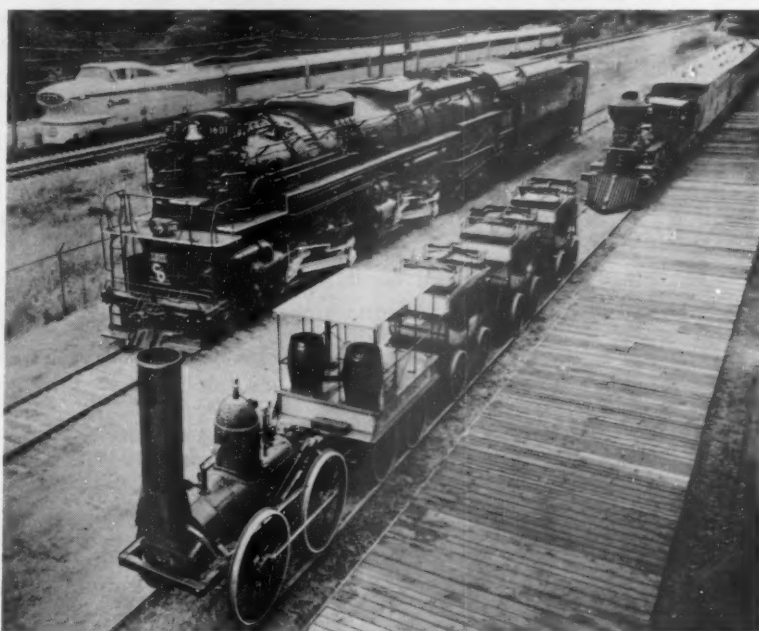
Use of the space should be the determining factor in any decision regarding installation of cooling equipment, the chief engineer of an eastern road maintains. He would give priority to areas used by the public, including well-patronized restaurants and offices where business is conducted with railroad patrons.

He also would air-condition offices "where heat from Teletype receiving machines and electronic tubes add to high temperatures," and believes that efficiency would be improved if temperatures were lowered in such areas as drafting rooms, telephone ex-

changes and rooms housing office machines.

When it remodelled a large warehouse for use as a general office for its accounting department, the Central of Georgia also installed an 85-ton summer and winter system, this being indicative of the generally greater progress in use of air-conditioning made by railroads in the South than those in the North.

J. B. McKerly, acting chief engineer, Central of Georgia, says that "air-conditioning is very desirable as it fulfills the need for increased production, cleaner working conditions and improved employee morale." In addition to its ware-



Four Generations of Locomotive Power

Replica of "DeWitt Clinton," first train in revenue service (1831), and 1860 woodburner "Sam Hill," (right background), make study in contrasts ranged alongside Allegheny-type steam locomotive built in 1941 and

New York Central's new "Aerotrain" at Henry Ford Museum, Dearborn, Mich. Chesapeake & Ohio steam engine was just donated to museum while "Aerotrain" made brief stop in salute to predecessors.

house conversion project, the Central has also installed air-conditioning in many types of existing buildings such as general and division offices, offices in yard and shop buildings, telephone and telegraph equipment rooms and larger freight agency offices.

Practical and Pleasant—"Air conditioning of buildings will increase the efficiency of employees and protect valuable and delicate equipment, and it is pleasing to patrons," the chief engineer of still another southern road believes.

His road has air-conditioned many new and remodelled buildings including station-office structures, yard offices and buildings housing CTC and other electronic equipment.

Uncertain Value—While his road has provided air-conditioning in most private offices, in executive offices and other areas, the chief engineer of another road states it is "somewhat questionable" whether the cost of such installations can be justified on the basis of increased efficiency of employees.

A foremost exponent of air-conditioning is the Missouri Pacific, which installs the equipment as a matter of course when building a new station or doing an extensive remodeling job. This road started out by air-conditioning all dispatchers' offices and is now working on a program to equip superintendents' and yard

A LOOK AHEAD TO FACTORY AIR-CONDITIONING

Here's a look into the industrial air cooling future by The Trane Company, manufacturer of air-conditioning equipment. D. C. Minard, president, made a nationwide survey of architects and consulting engineers asking them to estimate what proportion of new and existing factories will be air-conditioned in 1960, 1970, and 1980.

Their answers convinced him that "factory air-conditioning increasingly is being accepted by practical businessmen who insist on getting their money's worth from any investment." A sample of the survey shows these forecasts:

City	Year	% Factories Air Cooled	
		New	Old
Atlanta	1960	40	10
	1970	80	50
	1980	95	80
Chicago	1960	3	6
	1970	12	20
	1980	25	30
Cleveland	1960	7	4
	1970	20	15
	1980	35	25
Houston	1960	50	75
	1970	100	100
	1980	100	100
San Francisco	1960	3	6
	1970	12	20
	1980	25	30

offices with cooling systems. The MP's large general office building at St. Louis was air-conditioned several years ago and the road is now "taking the heat off" some freight offices.

New general office buildings—

—like those of the Cotton Belt at Tyler, Tex., the Toledo, Peoria & Western at Peoria, and the Minneapolis & St. Louis at Minneapolis—are usually air-conditioned throughout these days as railroads weigh cost of the equipment against possible benefits to be had from it.

Special problems confront the railroads in their efforts to match the cool interiors of air line and bus depots, largely because of the high ceilings and irregular layouts of many existing terminals. Numerous stations have been air-conditioned, others are being equipped with cooling systems and the railroads are attacking the problems presented by old-type structures by cooling small enclosed spaces such as shops or ticket offices.

Still another problem is presented in the growing use of modern computing machines—"giant brains"—which require air-conditioned atmosphere to operate. R. B. Curry, comptroller of the Southern, describing plans to remodel part of its office building at Washington to house an IBM digital computer, explained that the temperature in the space must be maintained at 72-80 degrees. He said that the ideal temperature is 78 degrees while relative humidity has to be kept between 40 and 60% and the air must be kept almost completely free of harmful dust particles.

NIT League Protests Demurrage Rate Rise

Asking ICC to suspend tariff, it says railroads "have been guilty of an utterly inadequate car program"

The National Industrial Traffic League has accused the railroads of having been "guilty of an utterly inadequate car program."

The accusation was part of the League's protest against demurrage rate increases which the railroads have published to become effective September 1 (Railway Age, July 16, p. 5). The protest, filed with the Interstate Commerce Commission, asks that the tariff be suspended for the reason, among others, that the proposed increases in demurrage rates and changes in demurrage rules will "enrich railroads for results of their own faults and omissions and will be against the public interest."

The proposed increases would

raise demurrage rates to \$4 for each of the first two days after the free-time allowance, \$7 for each of the next two chargeable days, and \$10 per day thereafter. Proposed rules changes would reduce, from four to two, the number of credits usable to offset debits under average agreements. And Saturdays, Sundays and holidays would be charged against straight-plan cars on the same basis as they are now charged against average agreement cars, i.e., unless they occur prior to or during free time.

The League was critical of officers of the Association of American Railroads who, it said, have "freely alluded to" the proposed increase as

a 33 1/3% boost. "Nothing," it added, "could be more misleading than this description emphasizing the increase in the basic rate and passing by the other features."

The protest went on to say that the rules changes will confront numerous shippers with increases ranging from 100% to 200%. It cited special studies which indicated that, if the tariff had been in effect during May, that month's demurrage payments by two companies would have been up 473% and 293%—from \$7,515 to \$35,560 in one case and from \$25,842 to \$75,617 in the other.

The money involved was not its primary interest, however, the League said, recalling that it has often supported railroad pleas for adequate (Continued on page 10)

Carloadings Up.—Loadings of revenue freight in the week ended August 4 totaled 660,287 cars, the Association of American Railroads announced on August 9. This was an increase of 10,481 cars, or 1.6%, compared with the previous week; a decrease of 100,100 cars, or 13.2%, compared with the corresponding week last year; and a decrease of 7,305 cars, or 1.1%, compared with the equivalent 1954 week.

Loadings of revenue freight for the week ended July 28 totaled 649,806 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS For the week ended Saturday, July 28			
District	1956	1955	1954
Eastern	108,951	133,628	110,532
Alleghany	104,381	154,590	124,621
Pacahontas	60,947	62,376	50,528
Southern	123,203	121,602	113,368
Northwestern	75,643	136,864	114,549
Central Western	119,002	122,562	115,406
Southwestern	57,679	58,404	54,613
Total Western Districts	252,324	310,230	284,568
Total All Roads	649,806	790,426	683,617
Commodities:			
Grain and grain products	61,326	65,743	58,617
Livestock	8,155	5,686	5,873
Coal	131,593	132,880	109,329
Coke	4,266	12,117	7,031
Forest Products	48,911	47,651	38,671
Ore	72,118	86,476	68,148
Merchandise l.c.l.	57,054	67,341	60,164
Miscellaneous	321,383	372,530	355,784
July 28	649,806	790,426	683,617
July 21	648,492	781,908	684,281
July 14	619,986	794,138	694,545
July 7	478,297	648,992	569,562
June 30	755,292	695,841	618,539
Cumulative total, 30 weeks	21,323,995	20,895,558	19,133,831

In Canada.—Carloadings for the seven-day period ended July 21 totaled 95,342 cars compared with 95,626 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
July 21, 1956	95,342	30,780
July 21, 1955	87,790	30,777
Cumulative Totals:		
July 21, 1956	2,374,681	985,503
July 21, 1955	2,139,747	898,163

New Equipment

FREIGHT-TRAIN CARS

► **Central Vermont.**—Has been assigned program of rebuilding 100 Grand Trunk Western box cars at total approximate cost of \$300,000 in St. Albans, Vt., car shops, making possible recall of 30 furloughed carmen.

► **Nickel Plate.**—Ordered 100 70-ton covered hoppers, all equipped with roller bearings, from Greenville Steel Car Co.; deliveries expected to start March 1957; cost about \$890,000.

► **North American Car Corp.**—Ordered 125 covered hopper cars at \$1 million estimated cost; Pullman-Standard will build 50 and Greenville Steel Car Co., 75; delivery scheduled for second quarter 1957. North American has also announced orders for 100 tank cars from ACF Industries, delivery first quarter 1957 and increase of a previous order for 25 covered hopper cars from Pullman-Standard to 75.

► **Reading.** Ordered 100 70-ton covered hoppers from ACF Industries; cost over \$850,000; deliveries expected April 1957.

► **Southern Pacific.**—Will proceed with construction of 150 new 79½-ft piggyback flat cars under plan reported in this column Nov. 21, 1955. Cars will be built in company shops under license from Piggyback, Inc.; cost \$1,750,000. An added \$250,000 will be spent to equip more than 800 Pacific Motor Trucking Co. semi-trailers and 20 tractors with flanged-wheel dollies.

LOCOMOTIVES

► **Steam Ownership Declines.**—Ownership by Class I roads of steam locomotives decreased to 5,203 on May 1 from 7,538 on that date in 1955, AAR reports, while diesel ownership climbed from 24,148 to 25,401:

	Owned or Leased May 1		Stored Serviceable May 1		Waiting Shops May 1	
	1956	1955	1956	1955	1956	1955
Diesel (A & B Units)	25,401	24,148	14	44	953	823
Steam (Locomotives)	5,203	7,538	832	1,705	925	1,247
Electric (Units)	629	659	9	15	73	74

Maintenance Expenditures

► **Rose 9.6% in May.**—Expenditures by Class I roads for maintenance of equipment, way and structures were up \$26 million or 9.6% in May compared with same month last year according to ICC Bureau of Transport Economics & Statistics report summarized below:

	May '56	May '55	% Change
Maintenance of Way & Structures	\$130,673,323	\$120,297,795	Up 8.6
Maintenance of Equipment	165,045,046	149,322,881	Up 10.5
Totals	295,718,369	269,620,676	Up 9.6

(Continued from page 8)

revenues in general rate cases. It does not think the proposed increases are reasonable for permanent application, but says they are published as such, although "ostensibly" they are "emergency measures."

Railroad hearings on the matter were called "completely perfunctory on the part of the carrier committee," but nevertheless marked by over 300 registered protests of shipper interests with no registration in favor. Another development at the hearings, as the League put it, was the "distinct inference" that the railroads "were proceeding responsive to or in harmony with urgings of the commission's Bureau of Service."

Moreover, there was at the hearing "never a hint of any design to increase railroad revenues," the carriers having docketed the proposals "only as emergency measures for car shortage alleviation." This was contrasted with statements in the memorandum which the railroads

filed with the commission in justification of the increases. The memorandum stated that the increases were proposed for the two-fold purpose of alleviating the car shortage and compensating railroads, in part, for increased costs of car ownership and maintenance.

No Solution — Meanwhile, the League advised the commission that past experience with penalty demurrage rates has indicated that they "did not substantially result in making more cars available." It also said that the desire to "punish guilty persons, bad actors, affords no excuse for penalizing the far greater number of those who respect their responsibility to release cars as promptly as is practically possible."

The League said it had not made "the slightest effort" to develop shipper opposition to the proposals. "The simple fact," it added, "is that the shipper sentiment is so strong and universal against these proposals that the League office is being bom-

barded by its members and by non-members, urging emphatic League protests and indicating countless individual or group protests are in preparation and on the way." In closing the protest said the railroads' supporting memorandum had failed to go to the "real heart of the matter," which is this:

"The railroads collectively, some much worse than others, have not maintained their car supply to meet the growth of the traffic; their car repair program continues inadequate, the out-of-order cars exceeding in number the shortages of cars for loading; their delays in terminal performance and frequent slowness of road movements are prime factors against which the proposed charges and restrictions afford not the slightest relief. Not having met their obligations to provide adequate equipment, the railroads in AAR now hope to require shippers to cure the deficiency, under the pressure of imposed demurrage penalties."

Railroads Say ICC Thwarts Cost Cutting

Commission's approach to competitive rate cases has that effect, Langdon tells House Interstate Commerce Committee

The railroad industry has advised the House Interstate Commerce Committee that the ICC's "full cost" approach to competitive rate cases could have the effect of "denying to the form of transportation with

the higher constant expenses an opportunity to lower its unit costs and thus qualify itself as the low cost form of transportation."

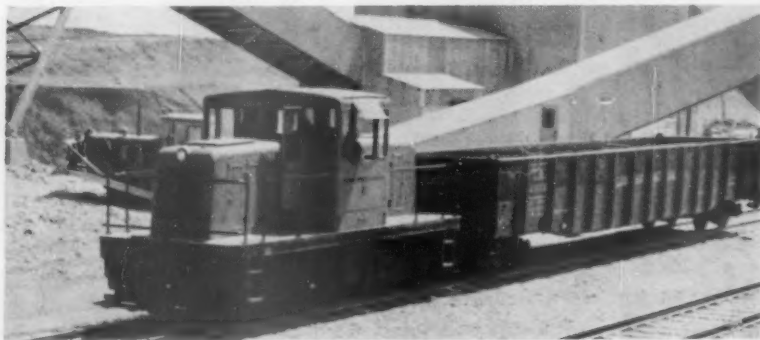
In addition, the railroad statement also said, the ICC approach "will

have the effect of apportioning traffic to forms of transportation whose full economic costs are not included because the taxpayers provide and maintain their rights of way—often at no charge."

The statement was filed with the committee on behalf of the Association of American Railroads by Jervis Langdon, Jr., who is chairman of the Association of Southeastern Railroads. It went into the record of hearings the committee held on recommendations of President Eisenhower's Cabinet Committee on Transport Policy and Organization.

It was a reply to a statement filed earlier by the ICC (Railway Age, July 30, p. 8). The commission came out for use of full costs in competitive rate making, and opposed those Cabinet Committee recommendations which the railroads have embraced as a rate-free program. The program calls for addition to the Interstate Commerce Act of provisions, called the "three-shall nots," which would prevent the ICC from considering the effect of a proposed rate on a competing form of transportation.

As to the commission's denial that



Steady Movement in Largest Gypsum Operation

One of two General Electric 45-ton, 300-hp diesel-electric locomotives that handle 7,000 tons of gypsum rock a day, is shown above at loading installation of North America's largest gypsum mine at Milford Station, N.S.,

Canada. After loading, locomotive moves cars to assembly yard and Canadian National takes them 31 miles to Wright's Cove where an identical GE locomotive hauls cars to hopper for transfer of rock to ships.

it attempts to "apportion" traffic among competing carriers, Mr. Langdon asserted that "regardless of terminology, the effect is apportionment." He proceeded to make a point-by-point reply to reasons the commission gave for opposing the "shall nots."

Dealing first with the commission's statement that the "shall nots" would "nullify" the National Transportation Policy, Mr. Landon said Congress included in the Transportation Act of 1940 provisions to prevent regulation of water-carrier rates in the interest of railroads. He also said that "like safeguards" were provided as to motor carriers. All of which led him to assert that "Congress intended the same result in the regulation of railroad rates."

"Equal treatment for each of the regulated forms of transportation," Mr. Langdon argued, "was emphasized and reemphasized during the course of the debates in the Congress on the Transportation Act of 1940, and this included the right of each form to assert its inherent advantage in competing with the others. . . . In its early decisions the ICC so applied the Transportation Act of 1940, including the National Transportation Policy."

Mr. Langdon also dealt with the commission's contention that it must consider the effect of proposed rates on other forms of transportation in order to avoid rate freedom's "probable result," i.e., "depriving shippers of the service of other carriers with lower full costs." What the railroads are seeking "is the right to make competitive rates which will at once reduce their unit costs and increase their net revenues," Mr. Langdon explained. Later on, he had this to say:

"The principal advantage the railroads appear to possess in the competitive race, particularly with the motor carriers, is the advantage of low unit costs based on volume, and when the ICC interferes with the assertion of this advantage for the purpose of protecting competing forms, it can render the railroads as competitors largely impotent."

Water transportation's growth in recent years is pointed up by figures in an appendix to Mr. Langdon's statement. "The ICC," he charged, "has helped the development of this inherently discriminatory form of transportation by re-

quiring that railroad rates reflect adequate unbrellas over the full costs to the shipper of using the water service—whatever those costs may be."

While the ICC thus protects water carriers, and in like manner protects truckers, it cannot protect railroads against water carriers and truckers, Mr. Langdon said. He explained: "The charges of most of these competing carriers are not even known to the ICC, let alone under its control. As far as the motor carriers

are concerned, their principal advantage of faster and more flexible service is not subject to the restraining hand of regulation. The rates of the relatively few barges under ICC control cannot be touched in the interest of preserving railroad service. Since the ICC is powerless to protect the railroads from the competition of other forms, it is grossly unfair to protect the other forms from compensatory and non-discriminatory railroad rates."

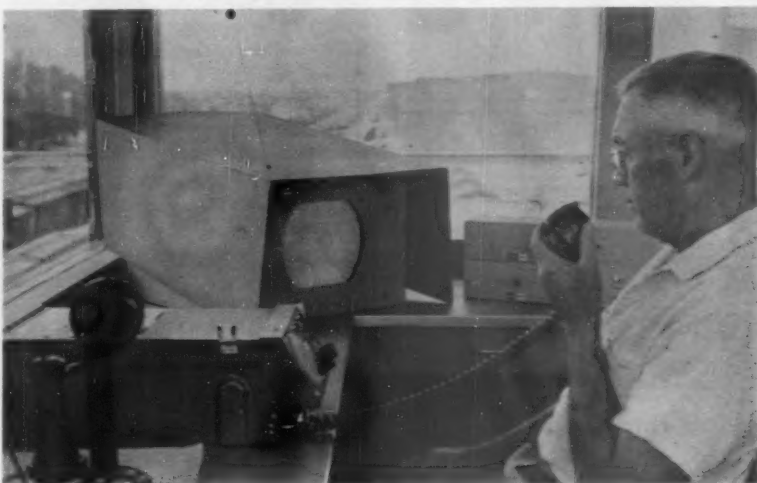
Fare Hike Plan Gets Mixed Reaction

As this issue of Railway Age went to press, some eastern roads were preparing to file with the ICC petitions for "substantial" increases in first class passenger fares. As reported in this paper on July 30, p. 5, the move is sparked by the New York Central and Pennsylvania.

Mixed reaction to the proposal had developed but considerable support for an accompanying request for a 5% coach fare was apparent. One eastern road spokesman stated, "we are definitely opposed to the first class increase proposal" but somewhat favorably inclined to the coach fare hike—although this road would prefer to hold off even on this for the time being.

The Chesapeake & Ohio, noting its confidence that the public will approve the increases sought, announced it is joining the PRR and NYC in their first class and coach petition. Higher fares are needed, the C&O stated, because of the continuing passenger deficit and the road's desire to maintain high service standards.

The Lehigh Valley and the Reading said they will seek the coach boost but not that for first class fares while the Nickel Plate and Baltimore & Ohio indicated opposition to the entire proposal. The B&O declared emphatically: "We are not a party to the petition;" the NKP stated: "It is not our thought to participate;" and



Southern Pacific Televises Ice Dock Operations

Television receiver in foreman's office of the Pacific Fruit Express icing plant at the Southern Pacific's Roseville, Calif., yard enables him to view icing operations, including positions of cars along the ice dock. The pan-and-tilt camera, mounted above and at

one end of the dock (1,600 ft away), can be remotely controlled by the foreman so that he can see the entire dock area, or look at a particular location. Two-way radio permits him to talk directly to the ice machine operator.

the Lackawanna reported it intends to take no action now while the Erie said it could not yet make any comment.

The effect of the fare hikes on interline business was considered a troublesome issue, particularly as western roads have indicated they are not going along on the proposal. The case of the New Haven's connections with the Pennsylvania was also thought to be a problem that would

have to be worked out if the NH did not join in the petition. A New Haven spokesman, noting that the matter is not yet officially before the New England Passenger Committee, however, declined to comment on his road's views. The initial PRR-Central proposal reportedly was for a 50% boost in first class fares and elimination of first class round trip tickets, plus the 5% coach fare increase.

RRB Benefits Down 50%

Unemployment and sickness benefits paid by the Railroad Retirement Board for the fiscal year ended June 30 were \$105 million—down almost half from 1955's record \$205 million.

Administrative costs were cut from \$7,823,000 to \$6,510,000 for the year.

H. L. Carter, director of RRB's Bureau of Unemployment and Sickness Insurance, attributes this showing "in part to the excellent and intensified efforts of railroad management, vigorously supported by the railway labor executives, and to the coordinating activities of the field offices of the Board."

D&H-NH-B&M Pact Rejected

The Interstate Commerce Commission has denied the Boston & Maine's application for approval of an agreement for the pooling or division

of traffic by and among itself, the New Haven and the Delaware & Hudson.

The agreement was designed to protect the D&H position as the western connection of the B&M at Mechanicville, N. Y., and thus end the D&H's opposition to an application of Patrick B. McGinnis for authority to become president of the B&M while continuing in the New Haven presidency which he held at the time. Mr. McGinnis' subsequent resignation from the New Haven eliminated any need for commission approval of his assuming the B&M presidency which he now holds.

The interested roads nevertheless left the pooling application before the commission. The pooling agreement provided, among other things, that the NH would not engage in practices having a tendency to divert traffic away from the Mechanicville gateway; and that the B&M and NH would cancel a 1934 agreement under which the NH has been paying the B&M \$1,000 a month to compensate the latter for its estimated loss of revenue (as compared with its divisions via Mechanicville) on westbound traffic routed via the NH.

The commission's adverse ruling was based on its stated inability to find that the proposed agreement

SPRECHEN SIE DEUTSCH? DIS IST EIN PRESZ RELEASE

Will huffenpuffers completen mit smokenstacken be available to haul three Jersey Central trainloads of outen-goers from Pennsylvania Dutch country to Jersey City en route to Bear Mountain (N.Y.) this Saturday?

Nein. It is der newisch-fangeld dieselgrinders that once again will pull the trains. Some 2,000 in "Pump-ernickel Bill's" party will leave such points as Jim Thorpe, Leighton, Palmerton, Walnutport, Siegfried, Northampton, Catasauqua, Allentown, Bethlehem and Easton on Saturday morning and overspeeden der rails to Jersey City.

From there, der flotenboten "Peter Stuyvesant" will leave about 10 A.M. and uppengesail der Hudson to Bear Mountain, returning to Jersey City at 7:30 P.M. where der clickety-clacken rockenrollers will be gestanden to completen der riden back—mitout begrimen der outen finery mit stack-smoken.

Ist true? Ja.—Thus, did Jersey Central publicity men Nathan W. James and Dante A. Costa herald a CNJ excursion.



Detroit Fetes Railroads

Detroit Kiwanis Club celebrated "Railroad Day" recently with address by G. S. Prince (center), AAR general solicitor, on "Competition in Transportation" being a highlight. Mr. Prince is joined here by V. C. Palmer, chairman of Railroad Community Committee and Grand Trunk Western general manager (right), and club president Marshall Woods, inspecting modern crossing flasher which was among railroad decorations.

met section 5(1)'s requirements for a pooling pact which might be approved. The commission had before it Examiner Homer H. Kirby's proposed report which recommended finding that the proposed agreement was not a pooling pact. The commission rejected that recommendation, holding that the proposal presented a pooling transaction of a kind which "we are not empowered to approve and authorize."

Three-Man Team to Study Spain's Railroads

Under sponsorship of the International Cooperation Administration, a three-man team of former American railroad officers is to make a four-month tour of Spanish railroads to seek ways to increase efficiency there.

Members of the team, which will set up headquarters this month in Madrid in a consulting capacity to the Spanish government, are Loyd J. Kiernan, retired vice-president, Boston & Maine; Charles E. Smith, retired vice-president, New Haven; and Herschel D. Barnes, retired comptroller, Chicago & North Western.

Financial

Chicago & North Western.—*Lease of Omaha.*—This road has applied to the ICC for approval of its proposed plan for leasing and operating properties of its subsidiary, the Chicago, St. Paul, Minneapolis & Omaha Railway Age, July 30, p. 12).

Dividends Declared

ATLANTA & WEST POINT.—\$1. payable August 1 to holders of record July 25.

BANGOR & AROOSTOOK.—60¢, quarterly, payable September 30 to holders of record September 6.

CHICAGO, BURLINGTON & QUINCY.—\$2, payable September 27 to holders of record September 12.

CLEVELAND & PITTSBURGH.—7% guaranteed, 87 1/2¢, quarterly; 4% guaranteed, 30¢, quarterly; both payable September 4 to holders of record August 10.

ERIE & KALAMAZOO.—\$1.75, payable August 15 to holders of record July 30.

GREAT NORTHERN.—62 1/2¢, quarterly, payable September 17 to holders of record August 23.

GULF, MOBILE & OHIO.—\$5 preferred, \$1.25, quarterly, payable March 11, 1957, to holders of record February 18, 1957.

GULF, MOBILE & OHIO.—30¢, quarterly, payable September 10 to holders of record August 17.

MAINE CENTRAL.—5% preferred, \$2.50, accumulation, payable September 1 to holders of record August 16.

MICHIGAN CENTRAL.—\$25, semiannual, payable July 31 to holders of record July 21.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—\$1, quarterly, payable September 1 to holders of record August 8.

PITTSBURGH, YOUNGSTOWN & ASHTABULA.—7% preferred, \$1.75, quarterly, payable September 4 to holders of record August 20.

READING.—4% non-cumulative 1st preferred, 50¢, quarterly, payable September 13 to holders of record August 23.

RUTLAND & WHITEHALL.—95¢, payable August 15 to holders of record August 1.

WESTERN OF ALABAMA.—\$3, payable August 1 to holders of record July 25.

Railway Officers

Barriger Succeeds Nash As P&LE President

John W. Barriger, author of "Super Railroads for a Dynamic Economy," and vice-president of the Rock Island since 1953, was elected president last week of the Pittsburgh & Lake Erie.

He succeeds John F. Nash who recently was named vice-president, operation, New York Central (Railway Age, June 11, p. 54). Announcement of Mr. Barriger's election was made by A. E. Perlman, president of the Central and chairman of the board of the P&LE. Mr. Nash will continue as a director of the latter road.

Mr. Barriger's book on "Super Railroads"—a report spelling out a course for the industry's future based on upgrading properties to top quality and promoting traffic—is published by Simmons-Boardman Publishing Corpora-

tion and was reviewed in Railway Age, June 4, p. 41.

Having attracted national attention as chief of the railroad division, Reconstruction Finance Corporation, from 1933 to 1941, Mr. Barriger was named reorganization manager and, when it came out of receivership, president of the Monon, serving that road from 1946 through 1952. Previously he had served as reorganization manager of the Chicago & Eastern Illinois, as federal manager of the Toledo, Peoria & Western and as manager of the diesel locomotive division, Fairbanks, Morse & Co.

CANADIAN PACIFIC.—A. W. Harris, superintendent at Toronto, Ont., transferred to the Smiths Falls division, succeeding L. R. Bangs, promoted general superintendent, Manitoba district, (Railway Age, Aug. 6, p. 13).

MISSOURI-KANSAS-TEXAS. —

Frank J. Heiling, formerly president and general manager, Texas City Terminal, appointed vice-president—industrial development of the Katy at Dallas, succeeding H. Gifford Till, director of industrial research and development, deceased.

The road's general passenger traffic departments at St. Louis, Mo., and Dallas, Tex., have been consolidated into one department at Dallas. Elmer A. Bohmeyer, passenger traffic manager at St. Louis, appointed freight sales manager there, with jurisdiction over the sales and service agencies in the Southeast and at Minneapolis and Milwaukee. Tom C. Connally, general passenger agent, succeeds Mr. Bohmeyer, and will head the newly consolidated department at Dallas.

Bertrand F. Caldwell appointed district sales manager, Shreveport, La., succeeding Royce L. Walters, transferred to Dallas. F. M. Davis named district sales manager of new sales office at Atlanta, Ga. J. G. Murray appointed division sales representative, to succeed T. J. Butrum, appointed division freight sales representative, Kansas City, Mo. D. W. Fraker appointed to the new position of district freight sales representative, Pittsburgh.

J. L. Cloyd, general agent of the Katy at Houston, named general agent (Continued on page 51)

there's so much to choose from at Hotel Cleveland!

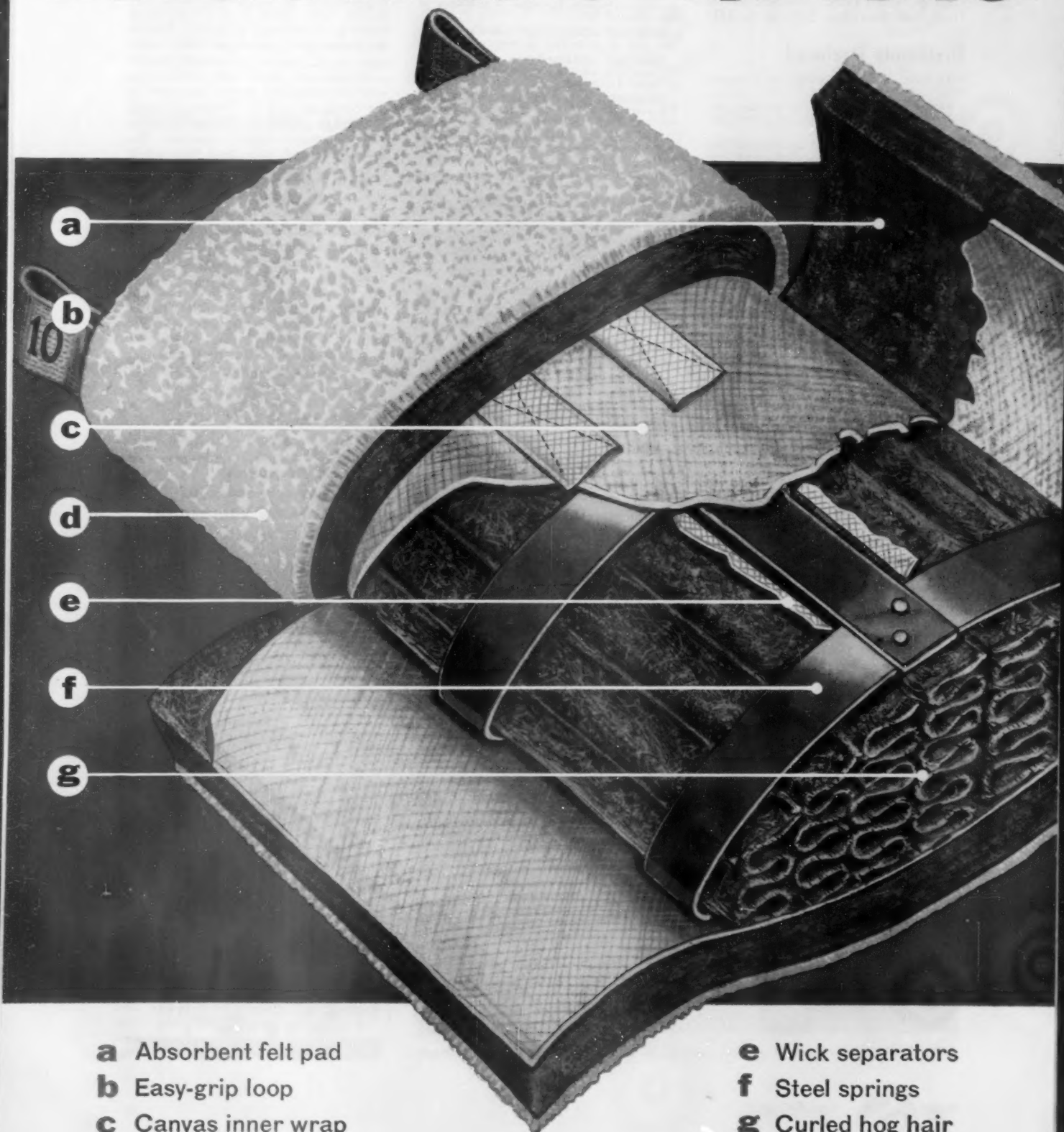
What's your pleasure? Fabulous roast beef in Cleveland's first specialty restaurant The Rib Room. Dancing to a famous orchestra in the smart Bronze Room. Relaxing over a drink in the stag Men's Bar. You'll find something to suit every taste and mood at Hotel Cleveland.

And you're in the very heart of town, close to business, shopping and theaters... directly connected with Union Passenger Terminal.



J. W. BARRIGER (center) confers with A. E. Perlman (right) and J. F. Nash.

See for yourself
EVERYTHING* IN THIS



- a** Absorbent felt pad
- b** Easy-grip loop
- c** Canvas inner wrap
- d** Wicking-action cover

- e** Wick separators
- f** Steel springs
- g** Curled hog hair

PAD FEEDS OIL...

new spring-action

SPRING-PAK

LUBRICATION PAD

PATENTS PENDING

**exerts constant pressure
on the journal**

**Everything except the spring steel,
and even that helps!*

Yes . . . in this new Spring-Pak Lubrication Pad, the resilient, curled hog hair acts as a reservoir. . . . The long-lasting cotton pad—the high-quality felt—the wick separators . . . *all have remarkable capillary action . . . all feed oil continuously!*

The tough, cotton outer jacket has been especially selected for its high wicking action—will not glaze—is lint-free.

Flexible, loop handles make application or removal fast and easy. No special skill is required—there's *never* a need to "jack" the box.

Note the inner steel construction in the cut-away illustration. Regardless of temperature, these bands prohibit any possibility of the core collapsing. Made of highly resilient, spring steel, they assure constant pressure on the journal at all times.

Use it . . . re-use it. The new Spring-Pak Lubrication Pad can be easily cleaned in hot oil—has exceptional reclamation value.

SPRING PACKING CORPORATION has been in the journal box lubrication field since 1920. Our trained personnel are thoroughly experienced, always ready to be of service.

Write today for complete information.

Serving the Railroads



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Questions and Answers

Of current interest to the Transportation Department

It has been suggested that one reason for a part of the perpetual shortage of Class A box cars is the car inspector's reluctance to certify cars as such. The contention goes that if a shipment is damaged, due to defective equipment, after the car forces have certified the car as top grade, the mechanical department is criticized for faulty inspection. Have you found this to be true on your railroad, and what has been your remedy . . .

?

CONDUCTED BY G. C. RANDALL, district manager, Car Service Division (ret.), Association of American Railroads, this column runs in alternate weekly issues of this paper, and is devoted to authoritative answers to questions on transportation department matters. Questions on subjects concerning other departments will not be considered, unless they have a direct bearing on transportation functions. Readers are invited to submit questions, and, when so inclined, letters agreeing or disagreeing with our answers. Communications should be addressed to Question and Answer Editor, Railway Age, 30 Church Street, New York 7.

No. Inspectors aren't sure of Class A characteristics

[In most cases we find] "that un-sureness of Class A car specifications in the mind of the inspector involved was the primary reason for [his selecting an unfit car].

"It was found that through personal instruction by the car foreman and district car inspector the car inspector regained confidence and the number of Class A cars available increased.

"Naturally, this reluctance on the part of car inspectors reduces the supply of Class A cars. But it has

been proved that giving instructions to agents on line as to what type of cars should be used for different commodities, especially for cars reloaded at their stations, has assisted considerably in keeping Class A cars from being down-graded just because of their availability. As a result more Class A cars are kept available without the necessity of moving to the repair track for up-grading."—R. E. Johnson, vice-president—operations, Chicago, Rock Island & Pacific.

No. Margin for error allowed

"In my opinion this condition does not exist on our railroad.

"I think the cause [of inspector unwillingness to grade cars Class A] is twofold:

"First, the result of actual claims filed, on which the damage or loss has been attributed to the car; and second, rejections by prospective shipper for alleged unfitness. In each case, the mechanical department is criticized by other departments because of expense caused by what is believed to have been faulty commodity inspection of the car.

"Our remedy—which is far from perfect—is:

"1. We try to insist that all empty cars be commodity inspected and carded, when possible, during daylight hours.

"2. Unless rejections of empties by patrons at any particular terminal

exceed 10% of the cars furnished on box cars and 5% on other types, we do not question the mechanical department's commodity inspection.

"3. During certain peak loading periods, we instruct agents and yardmasters to furnish cars of lower classification for certain commodity loadings, thereby relieving car inspectors of responsibility other than inspection and carding for commodity loading. Our instructions are specific as to the type of car and commodity grading authorized for loading of particular shipments in order to prevent complete relaxation from control.

"We believe our efforts have resulted in a reasonable compromise between the requirements of the operating and freight claim departments."—C. C. Robinson, superintendent car service, Monon.

A number of times in the past we have asked readers of this column to submit questions they would like to see answered here. The offer still holds. Railway Age will pay \$5 for each question used.

To be most helpful, this column should deal with questions important to railroad operating men. So, send along your questions and we'll try to get some meaningful answers. Questions on labor relations are not suitable for this column.—G.C.R.



Chilled Car Wheels are dollars in the bank

You start saving money even *before* you buy these wheels, because fast delivery from the nearest AMCCW plant permits you to maintain a very low wheel inventory.

After you have bought these wheels you save again because of their lower first cost and lower freight charges from the nearby AMCCW plant. Then you save again with lower machining costs and easier mounting.

Even after an AMCCW wheel has lived its long life, the savings continue. Short hauls to the nearest AMCCW foundry and low exchange cost for new wheels combine to keep replacement costs to the very minimum.



Association of Manufacturers of Chilled Car Wheels

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ACF Industries • Southern Wheel (American Brake Shoe Co.)
Griffin Wheel Co. • Marshall Car Wheel and Foundry Co.
Albany Car Wheel Co. • Pullman-Standard Car Mfg. Co.
Canada Iron Foundries, Ltd. • Canadian Car & Foundry Co., Ltd.

In good supply
Available locally
Short-haul delivery
Reduced inventory
Low first cost
Low exchange cost
Increased ton mileage
High safety standards
AMCCW plant inspection
Easier shop handling

Commonwealth One-Piece

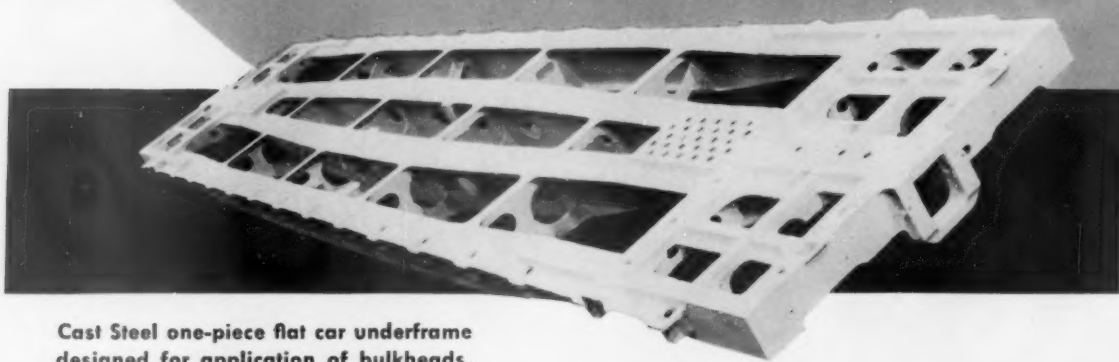
a flat car



a bulkhead flat car



with one underframe design



Cast Steel one-piece flat car underframe
designed for application of bulkheads.



GENERAL STEEL

Underframes give you **Two Cars in One!**

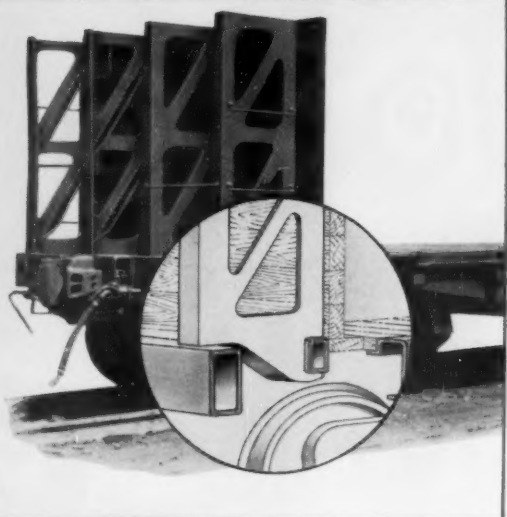
**with extra strength for long
maintenance-free life!**

Commonwealth cast steel flat car underframes actually give you two cars in one—because they have the extra strength required when cars are equipped with end bulkheads. The cast steel interlocking end bulkheads are easy to apply, easy to remove.

It takes a rugged underframe to stand up under heavy concentrated flat car loads and continuous use. Commonwealth underframes are especially engineered to stand up under toughest service demands. In fact, after more than 20 years of rigorous use, all of the original lot of 1500 Commonwealth flat car underframes are *still in active service!* Thousands more are proving maintenance-free performance and long life year after year.

The one-piece underframe eliminates stress concentration—permits better metal distribution providing uniform strength throughout with minimum weight. Corrosion is no problem.

For longest life, lowest maintenance costs and greatest service availability, it's sound economy to equip your flat cars with Commonwealth underframes.



Illustrating application of interlocking cast steel bulkheads... quickly done at low cost.

Plan wisely for the future—invest in Commonwealth underframes

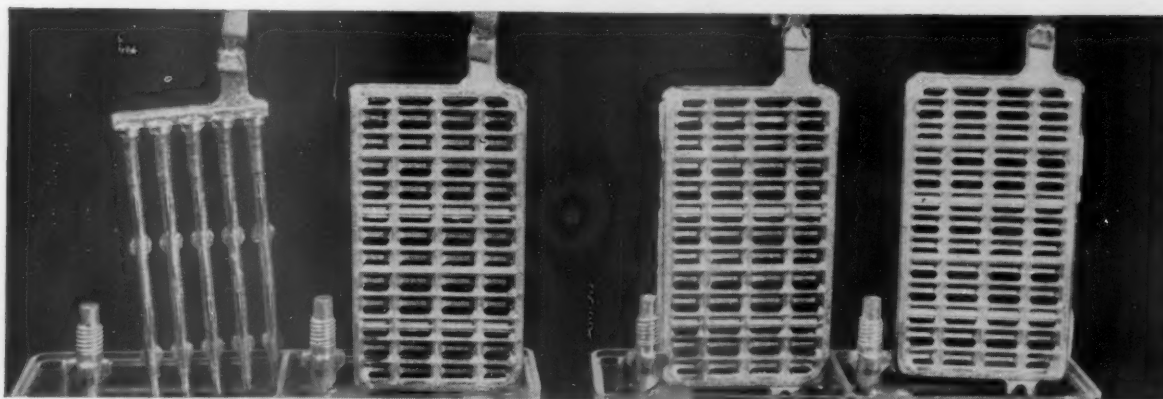
CASTINGS

GRANITE CITY, ILL.
EDDYSTONE, PA.



EXIDE-IRONCLAD BATTERIES

For railway diesel starting

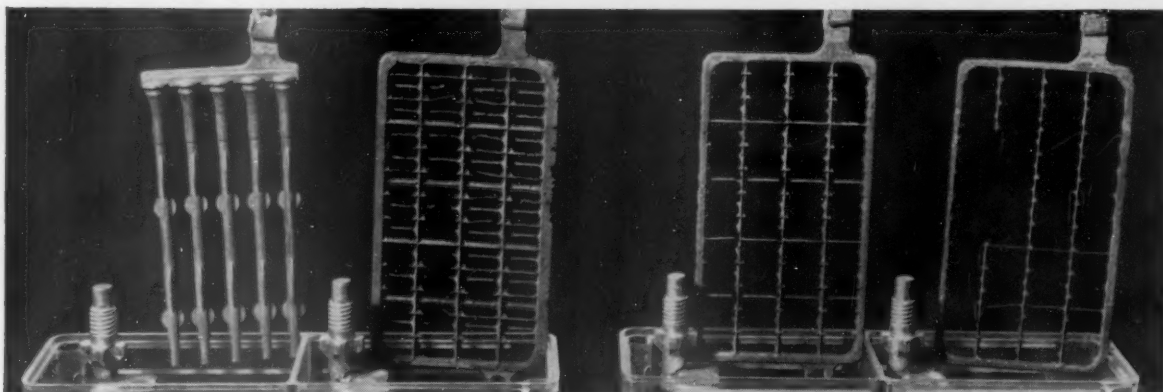


BEFORE: Silvium alloy

Alloy "A"

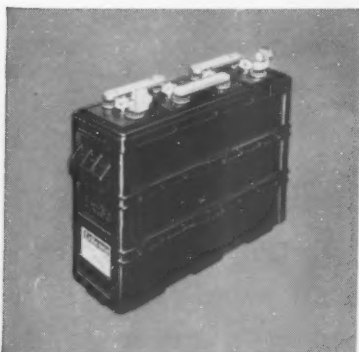
Alloy "B"

Alloy "C"



AFTER: Note how the Silvium grid resisted corrosion. Compare it with the other alloys.

Corrosion resistant SILVIUM prolongs battery life



BATTERY FOR RAILWAY DIESEL STARTING. Model MV-D. Its tubular construction provides for extra reservoirs of electrolyte adjacent to positive plate. Battery better able to supply sudden heavy power drafts to turn over starting motors. Extra heavy connectors offer minimum resistance to heavy currents. Write for Bulletin 5348.



Reaching down deep into every Exide-Ironclad Battery are the fingers of Silvium alloy metal which form the grids of the famous Exide-Ironclad positive plates.

Silvium is a special alloy developed by Exide to resist corrosion and thus prolong battery life. For proof, Exide research engineers compared the performance of an Ironclad Silvium grid side by side with ordinary grids of other lead alloys. As the photographs above show, only Silvium came through the test without damaging corrosion—undiminished in size, unimpaired in strength. The other grids showed from moderate to severe corrosion.

Tests have proved that Silvium is not only more resistant to corrosion, but also a better conductor of electricity.

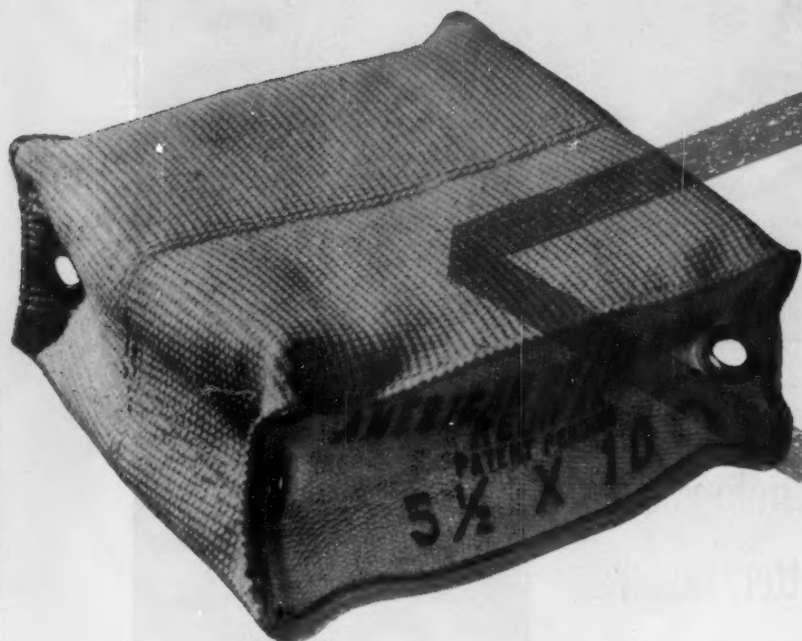
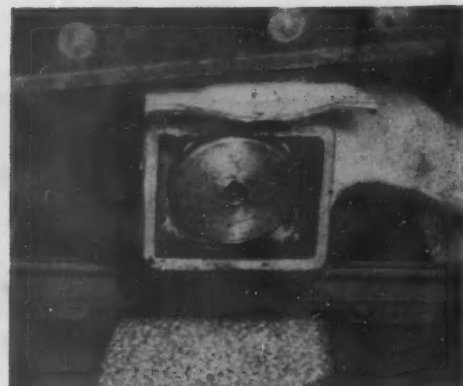
Hence it both prolongs battery life and—because there's less internal battery resistance—more readily permits heavy drafts of power.

This special material is only one of the many exclusive features which have made Exide-Ironclad Batteries world famous for high capacity and long life. When you order batteries for heavy duty applications, or the equipment requiring such batteries, be sure to specify Exide-Ironclad. Write for detailed bulletin. Exide Industrial Division, The Electric Storage Battery Company, Phila. 2, Pa.

Exide®

Simple The "Redipak" lubricating pad is a square block of foam neoprene, molded with cored passages and covered with cotton wicking material. It is installed—without any other packing—in the standard journal box without jacking the box.

foolproof The square "Redipak" lubricating pad is fully symmetrical—it can be installed any side out, either face up. It can be inserted by hand or with a "Redipaker"—a simple bent rod which speeds up the work—and is removed with a standard packing hook.



Stop Hot Boxes!

*"Redipak" Lubricating Pad points
the way towards elimination of the hot box problem*

cool-running The "Redipak" lubricated bearing has operated as much as 50°F. cooler than waste-lubricated bearings, under certain conditions. In laboratory starvation tests, with no free oil in the box, the "Redipak" retained enough oil for 10,000 miles of high speed operation.

long-lasting In service tests, "Redipak" lubricating pads have operated over 90,000 miles each, without noticeable wear. No pad has shown any sign of glazing. Inspection of the bearings shows that the pads do not lint.

No waste... with "Redipak"!



NATIONAL BEARING DIVISION
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this ACME STEEL
grain door **IDEA** can help you
serve grain shippers better, faster

Proved in service, these Acme Steel Grain Doors provide a fast, economical barrier for grain or malt shipped in box cars.

They're easy to set up for loading. Unloading is fast and simple. In transit, or during loading and unloading, Acme Steel Grain Doors assure positive protection and control of the load. Heavy, reinforced, high quality paper, supported by horizontal steel beams and vertical, flexible steel slats holds grain load securely and clear of the car door.

Let an Acme Idea Man give you a demonstration, or show you the new fact-packed Acme Steel Grain Door movie, there is no obligation. Or write for folder today. Dept. RAG-86, Acme Steel Products Division, Acme Steel Company, 2840 Archer Avenue, Chicago 8, Ill.

ACME STEEL **GRAIN DOORS**



ONE MAN . . . FIVE MINUTES . . .
Acme Steel furnishes all the parts, just unroll the package, drive ten nails per door and the Acme Steel Grain Door is in place.



STRONG . . . TIGHT . . . severe tests prove that the Acme Steel Grain Door can take all the punishment encountered under all handling and transit conditions.



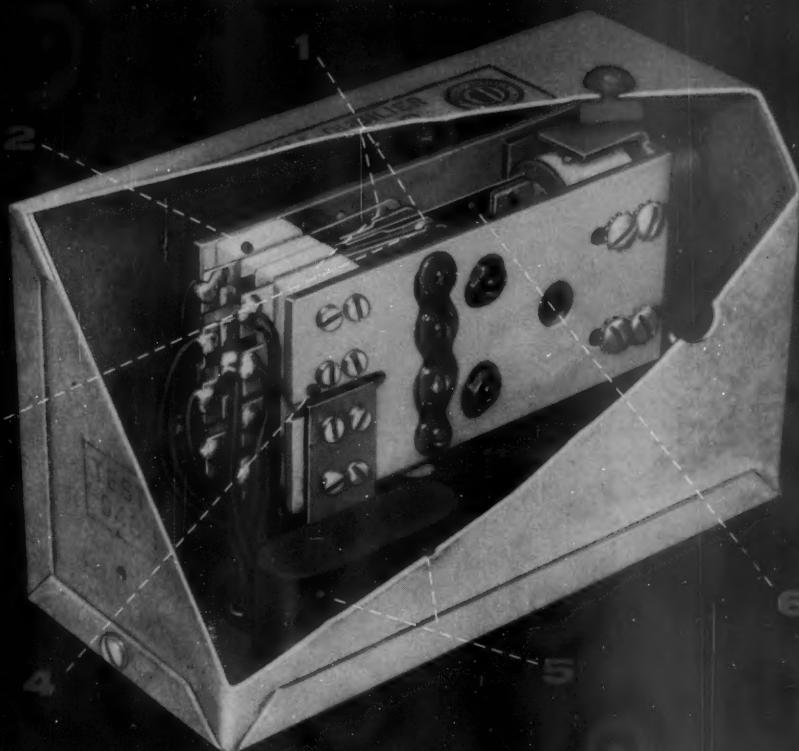
NO BULGE . . . EASY TO LOAD and UNLOAD . . . horizontal steel beams and vertical steel slats prevent bulge from springing the car door. Automatic and manual unloading are fast and easy.

C-D MARK IV

new improved vibrator

ADDS LIFE

to C-D Railroad Inverters!



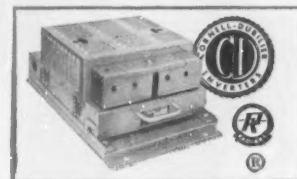
1. Electronically adjusted power contacts secured to the frame rather than to reed stops. Insures permanence under most rugged operating conditions of railroad service.
2. Precision ground ceramic blocks simplify stack. Allow closer tolerances on reed assembly.
3. Wider contact spacing without loss of time efficiency. Reduces tendency to arc at higher voltages prevalent in winter operations. Results in longer vibrator life.
4. Split frame equalizes pressure on stack. Accuracy of components as assembled and adjusted at factory maintained under extreme operating conditions.
5. Live rubber mounts—cushion the vibrator to maintain a smooth flow of power regardless of the extreme shock and vibration encountered in railroad operations.
6. Swedish steel reeds insure long life expectancy with negligible change in operating characteristics.
7. Eight-hour reed normalizing process for each and every vibrator—at greatly advanced voltages before individual electronic contact settings are made.
8. Rough start test. Every vibrator for railroad service must start under full load at advanced voltages repeatedly and without tendency to arc—before receiving Cornell-Dubilier final stamp of approval.
9. New Mark IV vibrator may be used in any C-D railroad inverter to obtain longer life.

For full details write for Engineering Bulletin EB-3004 on C-D's new railroad vibrators to Cornell-Dubilier Electric Corporation, Indianapolis Division, 2900 Columbia Avenue, Indianapolis, Indiana. Affiliated Member A.A.R.

CONSISTENTLY **CORNELL-DUBILIER** DEPENDABLE
vibrator inverters

For Industrial—Marine—Railroad and Appliance Services

PLANTS IN SOUTH PLAINFIELD, N. J.; NEW BEDFORD, WORCESTER AND CAMBRIDGE, MASS.; HOPE VALLEY AND PROVIDENCE, R. I.; INDIANAPOLIS, IND.; SANFORD, FUGUAY SPRINGS AND VARINA, N. C.; VENICE, CALIFORNIA; SUBS.: RADIANT CORP., CLEVELAND, O.; CORNELL-DUBILIER ELECTRIC INTERNATIONAL CORPORATION, N. Y.



UNI-PAK[®] *the proved performance* **LUBRICATOR** *with a high record of* **Trouble Free Car Miles**



Only Uni-Pak combines
the quality advantages
of wicking yarns
and neoprene

Exclusive UNI-PAK Features

1. Specially developed lubricating yarn sewn continuously through three inches of foam neoprene and terminating in non-glazing loops at top and bottom.
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145,000 UNI-PAK LUBRICATORS
now giving remarkable service on 30 roads

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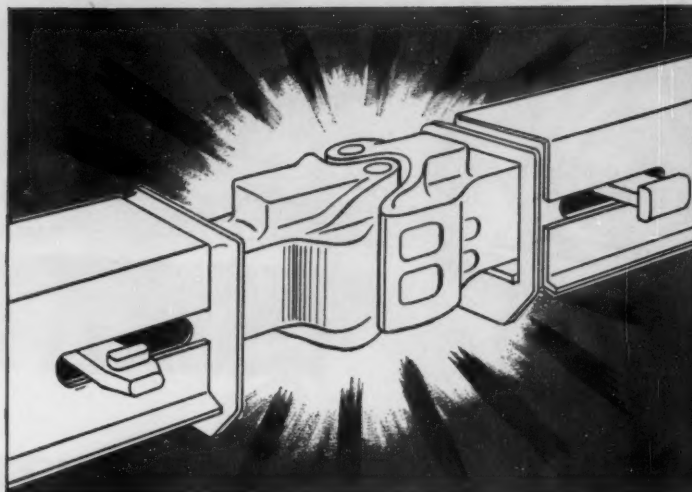
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Friction

Cushions!
Absorbs!
Dissipates!

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FRICTION DRAFT GEAR

You can't beat fundamentals! Within itself, a good friction draft gear sets up a yielding resistance to shocks, builds up this resistance as shocks are intensified. It does this with characteristically high absorption and low reaction.

That's how the Westinghouse *Friction Draft Gear* absorbs the forces between colliding cars; equalizes the speed of coupled, moving cars as

slack is run in and out, or as brakes are applied; allows serial action as long trains are started. Thus, by cushioning these otherwise destructive forces, the Westinghouse *Friction Draft Gear* protects rigging and car structure, cuts costly lading damage claims.

This is the time-tested principle of the Westinghouse *Friction Draft Gear*.



Cardwell Westinghouse Co.

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**CARDWELL
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parts



WORD ON ELECTRO-MOTIVE DEVELOPMENTS AT THE new 1956 progress show

Our Parts Progress Show is again on the road—better than ever—and being greeted with the same enthusiastic response it received last year.

Watch for it when it comes to your town!

You get up-to-the-minute information on the latest Electro-Motive engineering developments and parts improvements.

VISUAL DISPLAYS SHOW YOU

- the moneysaving advantages of our new Hi-Lift wick lubricator.
- precision methods employed in the manufacture of our new valves.

—the quality of materials, processing and inspection procedures used in our manufacture of engine bearings.

—the cost reductions made possible by Electro-Motive's unique packaging of such items as gaskets and safety plate glass.

These are a few of the points that will be of interest to every railroad official concerned with getting high utilization of Diesel motive power at lowest cost.

Schedules for Electro-Motive's 1956 Parts Progress Show are drawn up well in advance. Write us if you'd like further information.

IT PAYS TO BUY FACTORY-ENGINEERED PARTS

ELECTRO-MOTIVE DIVISION · GENERAL MOTORS

La Grange, Illinois • Home of the Diesel Locomotive • In Canada: GENERAL MOTORS DIESEL, LTD., London, Ontario



Now, accurate control of temperature is more economical than ever with

Honeywell Automatic Temperature Control!

Dependable, unvarying—and you save on installation, operation, maintenance.

THE PROBLEM with mechanical refrigerator cars is how to maintain *constant* temperature through extremes of heat and cold. In the course of a single trip, frozen foods or fresh produce must be protected through mountain country or desert. This requires precision cooling in some cases—heating in others.

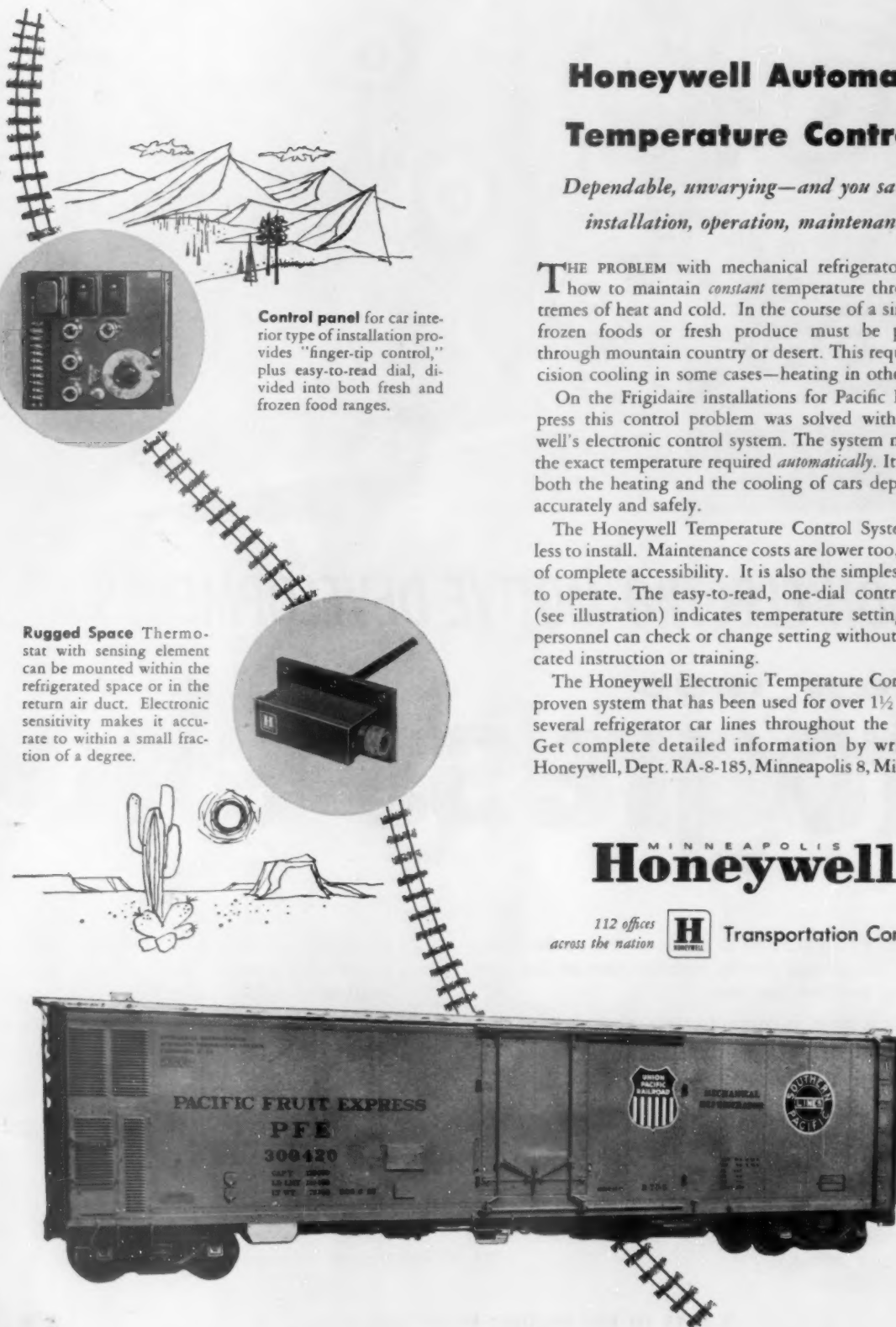
On the Frigidaire installations for Pacific Fruit Express this control problem was solved with Honeywell's electronic control system. The system maintains the exact temperature required *automatically*. It controls both the heating and the cooling of cars dependably, accurately and safely.

The Honeywell Temperature Control System costs less to install. Maintenance costs are lower too, because of complete accessibility. It is also the simplest system to operate. The easy-to-read, one-dial control panel (see illustration) indicates temperature settings. Yard personnel can check or change setting without complicated instruction or training.

The Honeywell Electronic Temperature Control is a proven system that has been used for over 1½ years by several refrigerator car lines throughout the country. Get complete detailed information by writing to Honeywell, Dept. RA-8-185, Minneapolis 8, Minnesota.

Rugged Space Thermostat with sensing element can be mounted within the refrigerated space or in the return air duct. Electronic sensitivity makes it accurate to within a small fraction of a degree.

Control panel for car interior type of installation provides "finger-tip control," plus easy-to-read dial, divided into both fresh and frozen food ranges.



MINNEAPOLIS
Honeywell

112 offices
across the nation



Transportation Controls



Dearborn 2-Bed De-Ionizing Plant.

DEARBORN DE-IONIZING UNITS SUPPLY MINERAL-FREE WATER

This Dearborn De-Ionizing Plant produces 75,000 gallons of demineralized water daily. It reduces the mineral content in the water to the equivalent of that produced by distillation—at less cost. The unit is equipped with Saran-lined steel pipe, as well as rubber-lined tanks and valves.

Whether you require a manual, semi-automatic or fully automatic system, Dearborn gives you the properly designed unit to do the job.

When specifications call for mineral-free water, see Dearborn for a quotation.

The complete Dearborn line includes De-Ionizing Units, Zeolite Softeners, and Treatment Feeding Equipment to meet all requirements.

Dearborn
SPECIALISTS IN WATER CONDITIONING
AND CORROSION CONTROL SINCE 1887

USE THE COUPON FOR ADDITIONAL INFORMATION

Dearborn Chemical Company, Dept. RA
Merchandise Mart Plaza, Chicago 54, Ill.

Please send me information on Dearborn's

- ☐ De-Ionizing Units
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City..... Zone..... State.....



Railroads report improved efficiency and reduced maintenance with **ALCO MODERNIZATIONS**

Railroads throughout the country are taking advantage of ALCO kits to modernize their motive power. Many are applying the modernizations as a package — locomotive by locomotive—during regular scheduled locomotive overhauls.

Reports from these railroads show that ALCO modernization material applied to engines in service has resulted in more efficient utilization of these locomotives and eliminated some costly maintenance problems. Modernization has brought these engines up-to-date, to the point where they can match the performance of those now coming from production lines. In many cases, the modernization has been achieved during normal overhaul periods, and it has increased time between subsequent overhauls.

Your ALCO motive power can also benefit from the application of modernization parts. Contact your nearest ALCO sales office for complete information, or write P. O. Box 1065, Schenectady 1, New York.

ALCO

ALCO PRODUCTS, INC.

NEW YORK

Sales Offices in Principal Cities

AVAILABLE MODERNIZATIONS AND MODIFICATIONS

Listed below are a few of the important ALCO modernizations which can mean increased efficiency in your ALCO R44 engines:

ALCO water-cooled turbocharger — more efficient, responds rapidly to changes in speed and load, easy to maintain.

Ni-Resist exhaust manifold — reduces casting growth and failures.

Cylinder heads — strengthened with additional metal to distribute stress more uniformly, makes possible use of valve-seat inserts.

High-pressure fuel injection with snubber valve — more complete fuel combustion, lube oil condition improved, line erosion reduced.

Ni-Resist insert pistons — top ring-groove wear reduced, increases ring mileage.

Grooveless and partially grooved engine bearings — oil film thickness and load-carrying capacity increased.

Hardened, chrome-plated crankshaft.

Serrated cylinder blocks — eliminates fretting at joint surface of saddle and cap, prevents distortion and misalignment.

Oil-bath filter — maintains high efficiency over 95 per cent, reduced filter maintenance, reduces engine wear.

Simplified amplidyne control system — fewer parts in system with simpler circuits, maintenance reduced.

Rolling Steel Doors

for Craneway Openings and Dividing Walls in School Gymnasiums

Rolling Steel Doors have proved over many years to be the most practical means of closing overhead craneway openings. This is true regardless of whether the closure be an exterior opening, for an extension of the craneway outside of the building, or a dividing wall inside the building as shown below. In this installation, three separate Mahon power operated rolling steel doors are employed with two swing-up mullions between, and two swing-up closure plates at each end over the crane track-beams—all are power operated and push-button controlled.

The full length door in the center is a railroad opening—the track enters the building through another Mahon power operated rolling steel door at the far end of the building. This center door can be opened independent of the other two for passage of railroad cars. The two rolling steel doors

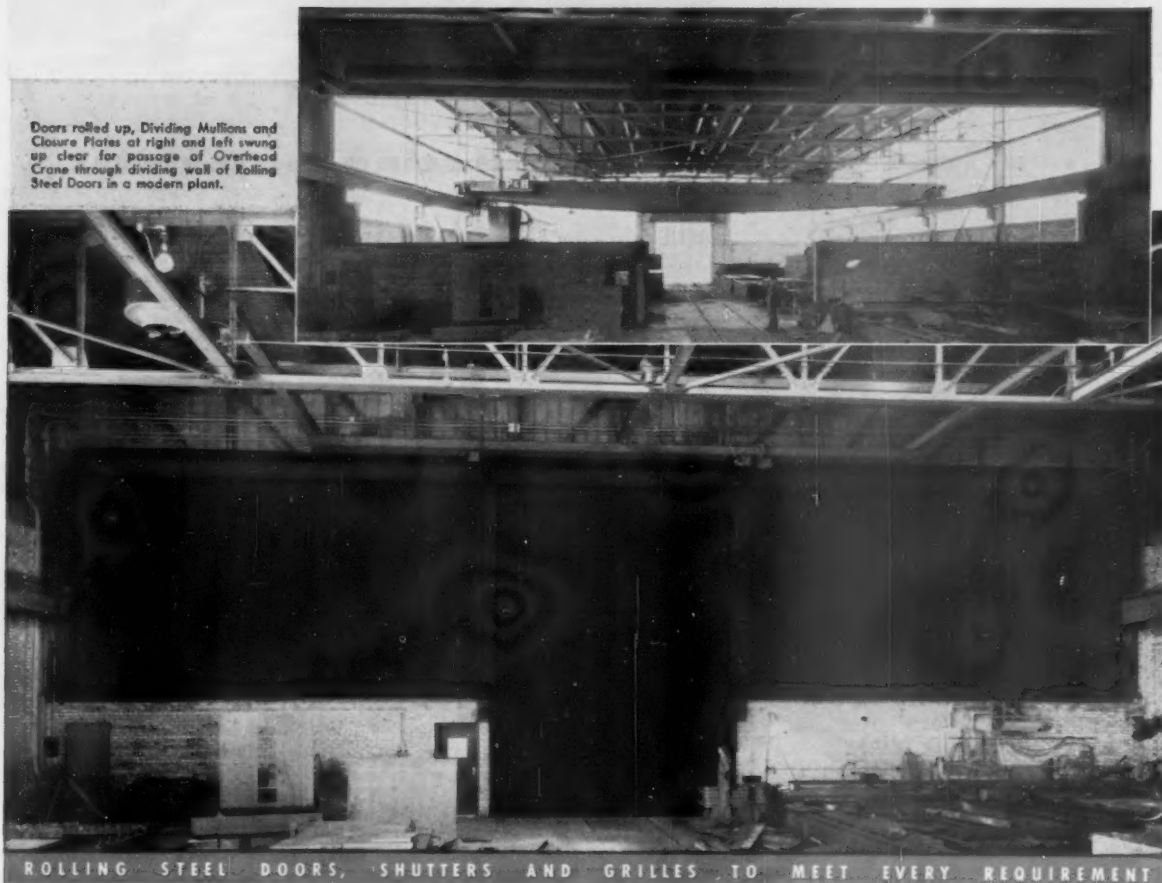
on either side, above the curb wall, are opened only for passage of the overhead crane.

Similar installations have proved most practical in school gymnasiums where it is desirable to divide the gym floor for certain activities. In these installations, aluminum or stainless steel doors are employed with sliding mullions which are moved to either side clear of the gym floor when the dividing wall is rolled up. The operation is accomplished electrically in a matter of minutes.

Mahon experience in this type of installation is extensive. Mahon engineers will cooperate fully in working out details of rolling steel doors for craneway closures or quick-acting, roll-up dividing walls to meet virtually any requirement.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago
Representatives in all Principal Cities

Doors rolled up, Dividing Mullions and Closure Plates at right and left swung up clear for passage of Overhead Crane through dividing wall of Rolling Steel Doors in a modern plant.



ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Three Mahon Power Operated Rolling Steel Doors form Dividing Wall which permits passage of a 15-ton Overhead Crane in an 80-foot Craneway in the Verson Allsteel Press Company's new plant, Chicago, Illinois.

MAHON

SYMBOL OF DURABILITY

Streamlite
HAIRINSUL



...outlasts ALL other insulating materials!

The installation of Streamlite HAIRINSUL into new refrigerator cars is a one-time investment, because it outlasts the life of the car, and can be used again and again.

The successful use of all-hair HAIRINSUL in refrigerator cars for half a century is the best testimony that service conditions never impair its high insulating efficiency.

Some of the major reasons why Streamlite HAIRINSUL is specified by leading refrigerator car lines are given at the right. Write for complete data.

AMERICAN HAIR & FELT COMPANY
Merchandise Mart • Chicago, Illinois

- **LOW CONDUCTIVITY** — Thoroughly washed and sterilized, all-hair heat barrier. Rated conductivity — .25 btu per square foot, per hour, per degree F., per inch thick.

- **LIGHT WEIGHT** — Advanced processing methods reduce weight of STREAMLITE HAIRINSUL by 40%.

- **PERMANENT** — Does not disintegrate when wet, resists absorption. Will not shake down, is fire resistant and odorless.

- **EASY TO INSTALL** — Blankets may be applied to car wall in one piece, from sill to plate and from one side door to the other. Self-supporting in wall section between fasteners.

- **COMPLETE RANGE** — STREAMLITE HAIRINSUL is available ½" to 4" thick, up to 127" wide. Stitched on 5" or 10" centers between two layers of reinforced asphalt laminated paper. Other weights and facings are available.

- **HIGH SALVAGE VALUE** — The all-hair content does not deteriorate with age; therefore has high salvage value. No other type of insulation offers a comparable saving.



SETS THE STANDARD BY WHICH ALL OTHER REFRIGERATOR CAR INSULATIONS ARE JUDGED

Reduce Rail Maintenance Costs with RTW Grinders and Drills

The Model P-22 Portable Flexible Shaft Grinder

... speeds the free hand finishing of surface welds on rail ends, crossings, frogs, flange ways, switch points and stock rails. This grinder is mounted on a one wheel carriage for easy transporting. A 6 hp air-cooled gasoline engine drives a counter shaft to which a flexible shaft is coupled. The engine is mounted on a ball bearing swivel plate which permits the maximum free movement in handling the flexible shaft which transmits the power to the grinding wheels. The speed of the grinding wheels can be regulated by a governor adjustment on the engine, so as not to exceed maximum speed of 9,500 surface feet per minute permitted under the safety code for high speed grinding wheels.

Model P-45-A Portable Rail Surface Grinder

... is an easily portable one-man Cup Wheel Grinder. It is modern and has been designed for greater durability and accuracy in grinding welded rail ends, removing mill tolerance and scale ahead of heat treatment of rail ends. This grinder will give a very smooth highly polished surface. The Model P-45-A is powered by a 3½ hp air-cooled gasoline engine with a V-Belt drive that acts as an overload release to prevent damage to other moving parts. An attachment is provided for tightening the V-Belt. A screw in a vertical slide frame equipped with bronze gibs permits take-up adjustment to compensate for wear and gives accurate adjustment to the Cup Wheel.

The Model P-43 Power Track Drill

... embodies many features to help to speed rail maintenance at reduced cost. It is powered by a 1½ hp air-cooled gasoline engine. The V-Belt drive acts as an overload release in the event the drill bit becomes cramped or sticks during operation. There are quick and simple adjustments for leveling the drill both on the top of the rail head, and supporting screws insure perfect alignment when drilling through angle bars or for bare rails. In case a bit binds and causes the motor to stall before a hole is completed, a stop on the rail head bracket permits the backing out of the bit. Positive, easily controlled screw for feeding bit. A telescopic extension in the rail head bracket facilitates drilling around switches. Openings up to 13" fully extended, permits drilling at the heel of switches and other locations around switches, the drilling of rails and guards in position. An outrigger attachment can be supplied if it is desired to use this machine on the track. It is quickly attached or detached for on or off-track operation. A knurled appliance between the handles of the outrigger provides a means for leveling the machine to compensate for various weights of rail.



MODEL P-43



VISIT OUR BOOTHS
NOS. 12N-16N INCLUSIVE

Railway Trackwork Co.

3207 KENSINGTON AVE., PHILADELPHIA 34, PA.

Write today for complete information covering the equipment described or on any of the equipment listed below.

TRACK MAINTENANCE MACHINERY

Rail Grinders • Switch Grinders • Cross Grinders • Surface Grinders • Rail Drills • Ballast Extruders • Bit Sharpeners • Tie Nippers • Grinding Wheels • Cut-off Wheels • Track Liners

*The best drop bottom
combination..*

**REDUCES DEAD WEIGHT
..CUTS LABOR COSTS!**



Spring Hinges and Adjustable Locks

ADAPTABLE TO ALL DROP BOTTOM GONDOLAS

Wine Drop Bottom Locks and Spring Hinges have long been established as the practical method for drop bottom closure. Basic simplicity and ruggedness of the mechanism requires little or no servicing, and the accessible method of adjustment on the individual lock assures positive door fit.

Featuring single door operation, any or all

doors open as required to control lading distribution. Maintenance-wise, a single door and mechanism may be dismantled without disturbing adjacent doors. The Wine Drop Bottom Combination offers all the important improvements—individual door fit, minimum maintenance, and easy, one man selective operation.

THE WINE RAILWAY APPLIANCE CO., TOLEDO 9, OHIO



FIRM SUPPORT for lading is assured by these adjustable bulkheads mounted on standard flat car (left). Spacing adjustments within limits of stake pocket locations are made by telescoping diagonal arms (above) as vertical end piece is moved flush against cargo.

"Bookend" Bulkhead Fits All Flat Cars

Faster unloading operations with prospects of less damage in transit are promised by a device that utilizes the elementary principle of the bookend. It holds lading in place by wedging it firmly between movable bulkheads.

The bulkheads may be fitted on any standard AAR flat car according to the lengthwise space filled by the lading.

Each bulkhead consists of a vertical end piece made of plywood faced with steel to which are welded supporting members that fasten to the car. It is locked into the stake pockets flush against lading, thus eliminating much of the dunnage required in box car shipments. In use on several midwestern roads, the device was tested by U.S. Plywood Corporation, which reports

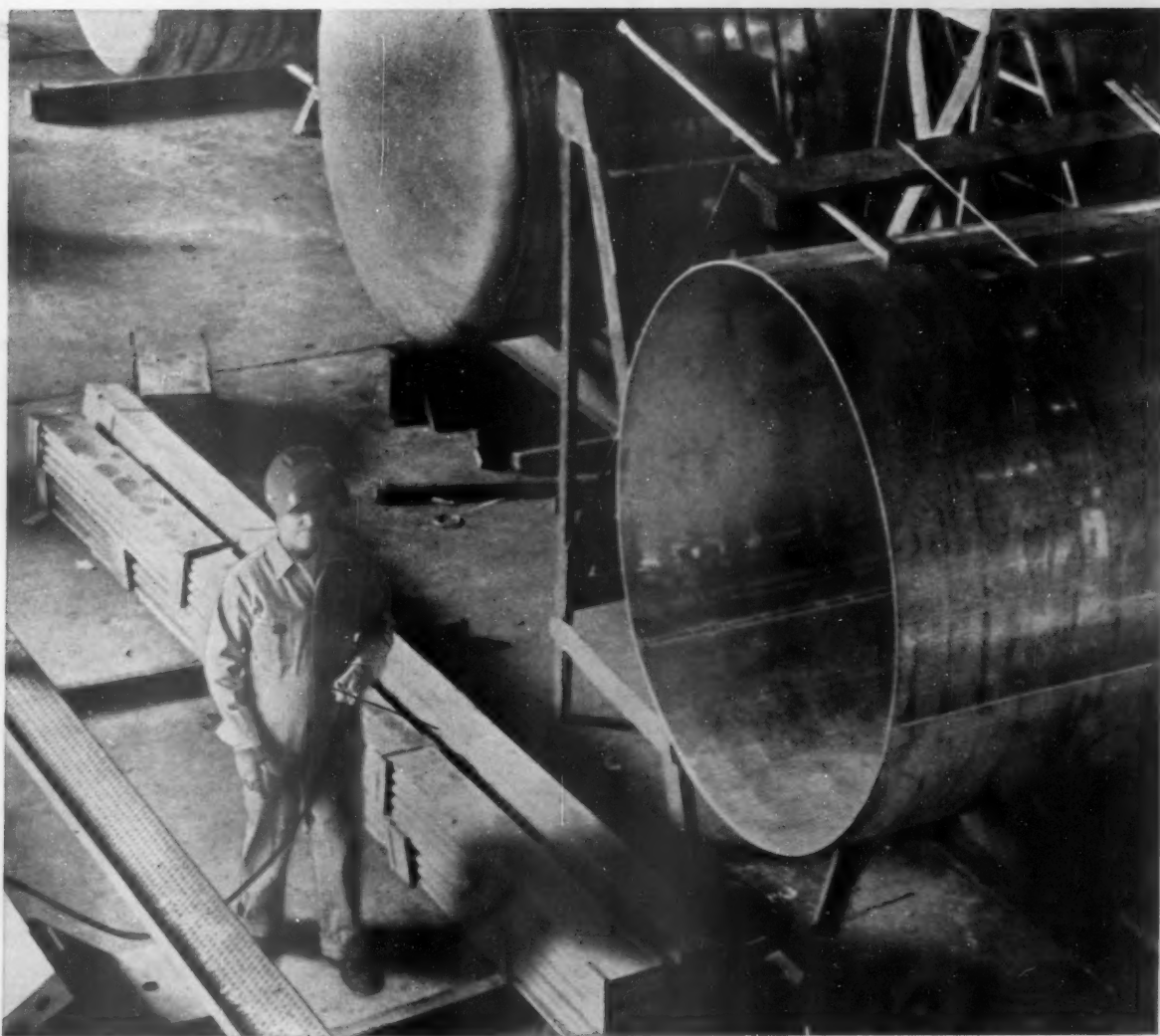
that savings in labor costs for unloading—as compared with unloading plywood from box cars—offset costs for weather-protective wrapping. Plywood, lumber, paper and gypsum shipments have already been made on cars equipped with the device, which is described as adaptable to many other types of cargo. *Hallgate Corporation, Dept. R.A., Des Moines, Iowa.* •



WEATHER PROTECTION for freight susceptible to damage from exposure in transit can be afforded with heavy paper coverings strapped over lading with metal bands.



BIG ATTRACTION to freight traffic men is quick unloading feature. This shipment of plywood was unloaded in one-third of time it would have taken with standard box car.



"Preventive medicine for tank cars?"

Tank cars take terrific punishment. That's why, like all equipment, they require periodical inspection and repairs to render the best possible service. In 30 car repair shops, strategically located throughout the United States, GATX tank cars receive this care—inspection, steam-cleaning, lubrication, tank testing, painting and general maintenance. The purpose of this "preventive medicine" is to keep GATX cars in service for longer periods—to give you maximum benefits from your GATX lease.

This service is part of every GATX lease . . . a lease that provides shippers with the most dependable service available for bulk liquid transportation. When you lease cars from General American, you avoid the need for capital investment as well as operating, servicing, and maintenance problems.

If you'd like additional information concerning the advantages of a GATX lease, call or write your nearby General American District Office.

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How Make Passenger Business Profitable?

The forthcoming ICC inquiry into passenger service holds out the prospect that much new information needed to make wise decisions about vital problems should be brought to light; and the further prospect (or, at least, the hope) that, armed with such information, the railroads, with the cooperation of the regulatory authorities, should be able to take the necessary steps to get their passenger business on a sound footing. There will be some who will regret the extended public hearings. On the other hand, it isn't only the regulatory authorities and railroad people who need to be informed about this problem. Members of the railway labor organizations, shippers, and the general public also are vitally interested, and public hearings—if properly publicized by the interested parties—should greatly advance public understanding of the situation.

There can be little doubt, from evidence already available, that there is a considerable part of the nation's passenger traffic which the railroads could handle more economically, and at greater public convenience, than any other transportation agency. The problem lies in getting the railroads out of those services wherein they are unable to excel and, at the same time, in removing the impediments which prevent them from making a more effective bid for that part of the traffic in which, inherently, their economic and service advantages are preeminent.

It seems quite clear that, between centers of population 400 to 500 miles apart, railroads can provide for volume movement of passengers (i.e., upwards of 500 per train) at lower total cost than any other common carrier. Over longer distances (1,000 miles upward), there is still plenty of traffic which will respond in volume to low rates—and attractively low rates are entirely possible in coach service, given close attention to costs.

Sleeping Car Problem

The problem as regards sleeping car service is more complex. Many of the custom-tailored room cars that now prevail in this service are (at present costs) expensive to build and to maintain—and it doesn't seem likely that rates high enough to cover such costs would wean many travelers away from the air. Probably more economical cars, but still in the luxury class, can and

will be built if it can be demonstrated that the public wants this service. A great deal depends on how skillfully railroad service is adapted to the potential market.

The inherent attractiveness of room-car service on railroads lies in the fact that it is the only really first class transportation being offered today—inside the country. Once the passenger has tickets for his "space," he can take things easy. He doesn't still have to scramble from gate to gate, in the endeavor to assure himself a comfortable seat, as he must do if he travels by air. There's no denying the magnificent speed of the air lines, the intelligence of their youthful personnel, the efficiency of their ticketing. But there's also no denying that comfort in air travel doesn't automatically follow the purchase of a ticket. Rather, it is the prize of the passenger with nimble feet and an alert eye. And the hazard of sudden death is always there—in spite of the praiseworthy improvement in the air lines' safety performance.

The steamship lines seem to be holding up pretty well with their passenger traffic, despite a speed handicap much more serious than that of the railroads—and the reason is the comfort they offer. Prospects for growth in sleeping car business—while possibly less favorable than for coach traffic—are a challenge to skill in production, pricing and sales. These prospects are not sufficiently "in the bag" to awaken the enthusiasm of the timid—but should prove attractive to the venturesome.

Lower Costs Imperative

Perhaps one big reason why "the passenger problem" isn't any nearer solution than it is, so far, is that there's been so much attention to *allocation* of expenses and somewhat less attention to *expense reduction*. The big expense, of course, lies in the labor factor. One trainman or engineman in freight service accounts for a lot more ton-miles today than in the mid-twenties, but this isn't the case with passenger-miles. And, for a contrast, just consider the duties performed by the air lines' hostesses. They do work which is equivalent, on the railroads, to that of train crews, porters and dining car employees. And plane crews work on a basis of standard hours per month—not mileage.

Passenger traffic should pay (1) if costs are reduced by more efficient utilization of labor, more economical organization, and more economical equipment; (2) if service is abandoned in "thin" situations, and is limited to routes where substantial trainloads are obtainable; (3) if the losses from commuter service are shifted from railroad patrons to the interests which benefit financially from the service; (4) if head-end business is placed on an improved economic basis; (5) if modern techniques of cost-finding and marketing are applied; and (6) if government will become somewhat less lavish in its donations to competing transportation agencies.

The gas business was not destroyed by the advent of electricity. By adapting itself to the jobs it could do best and dropping the others, gas survived and prospered—and the same could be true of passenger travel by rail.

Casting for the Future

National Malleable has pioneered in development of couplers and draft gears—and strives to lead in this and other fields in years ahead

WHY THIS RESEARCH SERIES?

The railroads have long been criticized by uninformed people outside the industry for lack of research. Actually, if the question be explored a bit, research with respect to railroad operation and facilities compares favorably with other industries. One outstanding difference is that no one railroad, large or small, engages in research to the extent that an equivalent independent industrial organization might. The reason is obvious. A railroad in producing transportation uses the products of several hundred different companies, each functioning in its own way to produce an end result.

The railroads do carry on as a group a substantial research program under the direction of the AAR Mechanical Division and the AREA (Engineering Division) at a research laboratory in Chicago.

Individual railroads such as the Pennsylvania, Santa Fe, Southern, New York Central, Chesapeake & Ohio, Southern Pacific, Lackawanna and D&RGW, to name a few, have active research departments with permanent facilities and personnel. But, actually, the research achievement of the railroad industry is a cumulative job, done for the greater part by a substantial number of the several hundred companies which make and sell equipment to the railroads.

The idea behind this Railway Age series, under the general heading of "Contributions to Railway Research," is to show, by a group of articles, the extent to which research in the interest of the railroad industry is carried on by such manufacturers in the railway supply field.

Large-scale research operations, either wholly or chiefly devoted to the production of better transportation by railroad, are described in these articles. The material is provided on invitation by representative companies to report in their own way their own research contributions, and the series does not undertake to cover the entire research activity under way in the railway supply industry, or even in any one segment of it. The order in which articles appear has no relation to the relative importance of the companies concerned. The series nevertheless will serve to show convincingly the impact on the railroad industry, and thus on the whole American economy, of the continuing research going on in the industry to make more efficient railroad operation possible.

Efforts of a million dollar research center that has been devoted almost completely to railroad research and development are but the most recent contribution National Malleable has made to the railroad industry. National's railroad production goes back almost to the founding of the company in 1868. And today finds the National Malleable & Steel Castings Co. looking to a future with the railroad industry—and spending for it.

Couplers have long been a primary concern of this organization. They were not, however, its first railroad product. During the early years, the company made a vast assortment of malleable iron hardware for railroad applications. In recent years the coupler and draft gear production has been accompanied by an increasing output of other cast steel parts—such as truck side frames, bolsters and yokes. Malleable iron production for railroad applications actually has a minor role in the picture.

Tomorrow's prospects were sketched recently by National President Cleve H. Pomeroy when he said, "National has long been associated with the transportation industry in our country. We are confident that all forms of transportation are needed in our economy, and are interested in going forward with each in every needed improvement. Our company has always tried to anticipate change, but has never liked to run after it."

Planning for the ever-increasing forces exerted on railroad equipment by higher operating and switching speeds has been a prime target of

work carried on at the 5-acre Technical Center adjacent to National's plant and general office in Cleveland. The facilities and efforts of most of the 100 engineers and technicians there are usually being applied to railroad problems.

Why is this? Typical recent years have seen only 35 per cent of National's sales dollar coming from railroad products. A tremendous volume of malleable iron castings goes to the automobile and farm equipment industries (half of all US malleable production), and a large number of steel castings are produced for the marine and heavy machinery fields.

The answer is that most of the designs for parts in these non-railroad fields do not originate with National. The firm deals with them only as a producer of castings—and a successful one with nearly ninety years of experience. Designs for automobile components are complete when submitted to National for quotation, and the technical problems which National must solve are those of metallurgy and production.

Ferrous Metals

Its position in the non-railroad fields was well summarized by President Pomeroy when he said, "The casting of ferrous metals—our specialty—is a process and not a product." Metallurgical research problems are handled by the Metallurgical Research Laboratory headed by H. H. Johnson, director of research. The department is responsible to the vice-president in charge of production because of its intimate concern with the materials used in production. The laboratory is equipped with equipment and instruments for the chemical and physical testing of metallurgical specimens. In general, little of this group's time is devoted to railroad problems.

Recently an increasingly popular foundry product has been pearlitic malleable iron—a cast material having the physical properties of medium carbon steel with the exception of its ductility. Pearlitic malleable is produced either by process control or with alloying elements.

An application of this material is in the housing of the Timken railroad roller bearing. The housings were originally forged in two parts, welded together, stress relieved, and then machined. National suggested a single cast unit of pearlitic malle-



RAILROAD PROVING GROUND is an integral part of the million-dollar Technical Center. National owns two

box cars which are used for road testing. Left end of main building houses laboratory.



METALLURGICAL RESEARCH laboratory adjacent to National's Cleve-

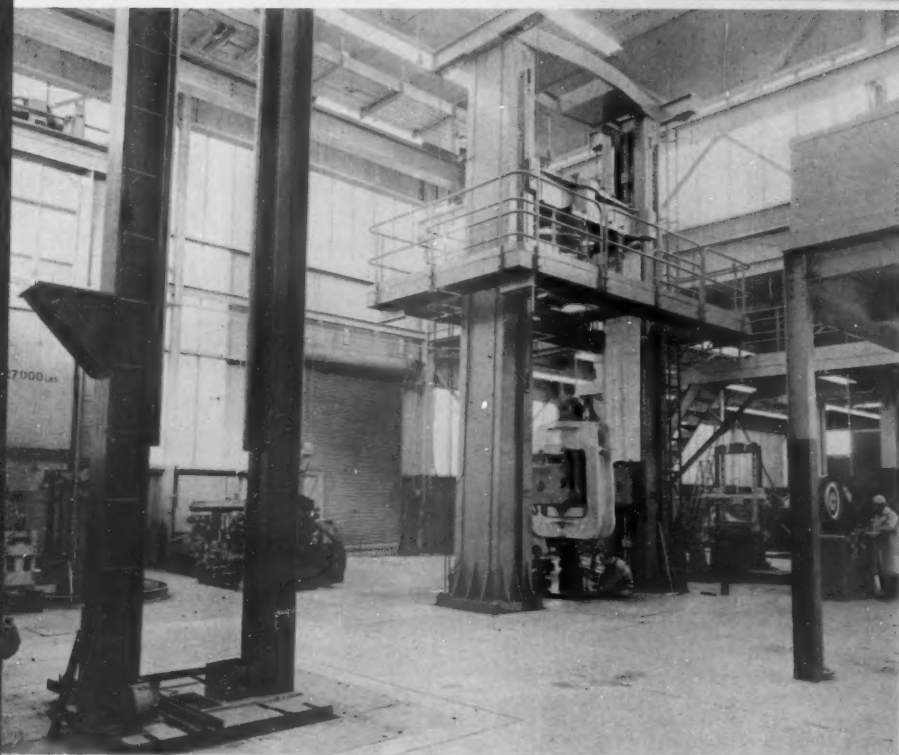
land works plays an important role in the development of alloys.

able iron. It presented a method of reducing the cost of the bearing assembly. A series of laboratory tests showed the material equal to the SAE 1030 steel formerly used. Timken road tests followed, and after three years' service the material is performing satisfactorily and is now standard with Timken.

National's contribution in this development was metallurgical. AAR specifications for most railroad com-

ponents do not allow a great deal of variation in chemical composition of alloys, or in the choice of the materials. National's work in the railroad field is usually in mechanical design, and process and quality control. It is here that there is an opportunity to pioneer equipment designs and arrangements, and a necessity for doing mechanical research.

Look at some of the design milestones. It was not until the nineties



AAR-TYPE TESTING machines and (center) million-pound static testing machine are used for research and

production tests. Various specialized equipment has been built for research and development purposes.

that National entered the field of coupling devices, although it had been making malleable iron railroad castings for years previously. In 1894, National produced the Tower coupler, patented by a National man in 1892. The ability to connect and lock automatically was not new, but giving a man the ability to unlock and open the knuckle from the side of the car was an important contribution. Need for greater coupler strength brought National Malleable Castings Company into the steel castings field soon after the turn of the century, and the malleable iron coupler began to disappear.

Standardization of couplers found the Master Car Builders adopting the Type D coupler in 1916, and the AAR's Mechanical Division accepting the Type E design in 1931. In 1936 National introduced the tight-lock coupler which became the AAR standard Type H in 1947. In 1944 the railroads requested the coupler manufacturers to develop a coupler with similar tightlock features for freight service. This has produced the Alternate Standard Type F interlocking coupler accepted in 1954. In these coupler developments, National was a participant with other suppliers through the Mechanical Committee of the Standard Coupler Manufacturers.

Each of the five coupler manufac-

turers* works independently on development concerned with new coupler designs. Each has an engineering representative on the Mechanical Committee, and meetings of this group are held two or three times a year. At these times, progress on each of the projects under joint consideration is evaluated, and the individual company approaches to problems are studied. The volume of development work contributed to different coupler designs by each manufacturer varies.

Rubber Draft Gear

In 1918 National Malleable began to produce its own freight car draft gears, and in 1930 it entered the freight car truck field. The National freight car friction draft gear was supplemented by the rubber draft gear for diesel locomotives in 1937. Various styles of these National rubber locomotive draft gears have been widely applied during the remarkable growth of the diesel locomotive over the past twenty years. These locomotive gears led the way for the first National rubber freight gear in 1950, and for its first rubber passenger car draft gear in 1951.

*Members of the Mechanical Committee of the Standard Coupler Manufacturers are American Steel Foundries, Buckeye Steel Castings, McConway & Torley, National Malleable & Steel Castings, and Symington Gould.

Four more types of rubber freight gear have been developed since the first was placed on the market in 1950. During this period many other designs of gears for special applications in the railroad and mine equipment fields have been produced.

Large volume production has led National Malleable to do considerable work with various recently developed production inspection and control techniques. These types of production control and inspection practices were accepted by military procurement agencies during World War II. Among the classifications are process control, quality control and surveillance inspection.

Results obtained from work in these fields by National's inspection department have been excellent, and the company feels that its expenditures are easily justified. However, railroad and AAR requirements for many components do not permit acceptance based on this type of inspection. Conventional railroad acceptance tests have given National an excellent check on its own control methods.

National has determined the factors involved in a production process which affect the qualities which the specification says the final product must have. Some variations in such phases as chemical composition or in melting and heat temperatures and elapsed times will produce a product within the specified ranges of strength, toughness and hardness, and within dimensional allowances. Rapid determination and constant records of such critical factors make possible an acceptable end product.

National applies all of its process and quality control methods to its railroad production, and finds its results reflected in a uniformly high acceptance rate for its castings. Such acceptance is given after conventional AAR and railroad physical and chemical tests. Newer inspection techniques have been producing a uniformly high grade product, economical for both the producer and purchaser. In addition to ordnance agencies, there is now considerable acceptance of these newer methods by industrial purchasers.

The National Malleable Technical Center† in Cleveland offers a range

†For a detailed description of the Technical Center see *Railway Age*, October 19, 1953, p.76.



ORE CAR being prepared for stress-coating—one of National's methods for determining the stress zones in car structures. After preparation, car is then moved to outdoor test ramp where actual experiments are carried on.



TESTING ON RAMP locates high stress zones and determines actual stress and accelerations produced in the car structure. Strain gages applied to coupler shank and structure measure stress figures and forces.

and completeness of facilities which National claims are "without equal anywhere." The Technical Center has four coordinated sections:

- An extensive physical testing laboratory with a wide range of testing equipment including electronic measuring and recording devices.

- An engineering department which develops products, engineers production methods, and provides customers with technical services.

- A proving ground with test tracks, car pits, and National's own specially equipped railroad cars.

- Administrative quarters and meeting rooms.

This elaborate operation is headed by K. L. Selby, chief engineer, Railway Division, who is directly responsible to President Pomeroy. This direct responsibility indicates the importance associated with the engineering, development and research work.

When this million-dollar facility was first placed in operation, it was said that "these related sections have been brought together primarily to provide National with the finest possible product design and development center; but an additional aim has been part of the plan. It has been our hope that the center, because of its equipment and design, will become a focal point for advanced thinking, as well as for advanced testing and research.

"It is our expectation that the facilities offered here will serve a need for other companies and institutions, as well as for individuals, who have long felt the need for the

range of equipment brought together in one place . . . who have also wished for surroundings of progressive thought and action in the fields the center will serve."

Railroads and their suppliers have been taking advantage of these facilities. Soon after the center went into operation a series of tests were run for the New York Central and the General Steel Castings Company. Compared on the National test ramp were the GSC cast underframe and the conventional fabricated underframe, installed under NYC gondolas. The cars were put through their paces at the National proving ground to compare the strength and performance of the two types of underframe construction.

Higher Speed Testing

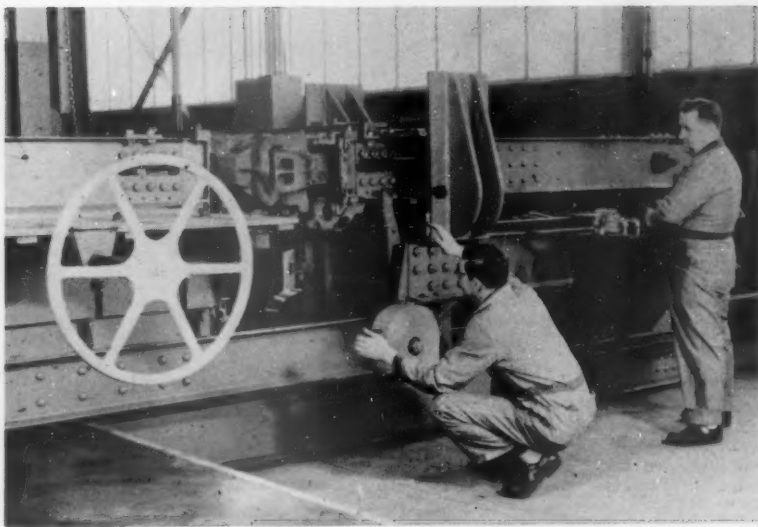
Work was done at the proving ground on Union Tank Line cars to develop what the stresses were in tank cars equipped with various types of draft gears. Then the Quebec North Shore & Labrador sent in two newly built 95-ton ore cars to be tested for adequacy of structural design. The 12 per cent grade of the incline in the proving ground makes possible car speeds up to 22 mph. The higher switching speeds encountered in all railroad operations today have made adequate car structure essential. National has been contributing to general railroad progress in this field with the facilities it provides at the Technical Center.

Structural investigations have con-

tinued. Bethlehem Steel Company sent in one of the 95-ton taconite cars it had built for the recently opened Erie Mining Company railroad north of Lake Superior, and a newly built, 70-ton, Western Maryland hopper car. A cooperative project involved the Great Northern, the Standard Railway Equipment Company, the Stran Steel Division, and the Youngstown Steel Door Company. The Great Northern had built a series of box cars with 15-ft doors patterned after cars with 9-ft doors which had been built earlier. The cooperative investigation determined the stresses developed throughout the body and roof of the two types of cars, and studied the design which had been made to accommodate the larger door opening. Also the structural effect of the Nailable Steel Floor was determined along with the strength of the newly designed underframe.

Only recently completed was a structural study of hopper cars conducted for the Norfolk & Western. Soon test work will be done on two Virginian cars. In all these projects, representatives of railroads and suppliers work along with National engineers. Not only are there benefits for the entire railroad industry, but at the same time the Technical Center has been accumulating a background of data and experience which can be of benefit to National Malleable, too.

While the Technical Center facilities have been offered to the entire railroad industry, the primary assignment naturally has been "to



COUPLER ANGLING device checks mechanical designs to assure that couplers will remain coupled on vertical and horizontal curves, and that

there is no interference which would prevent easy uncoupling and coupling. Rotary coupler development was done on this machine.



DRAFT GEAR and coupler travel can be measured. Coupler shanks are fitted with strain gages to determine the forces developed during impacting

tests on the ramp. Preparation for ramp test takes considerable time and requires special apparatus which National owns.

work with National products—which have been mainly castings of steel and malleable iron, and alloys of the two.” Typical of a recent project which was developed in the Technical Center was the rotary coupler applied to 350 Reserve Mining Company taconite cars described in *Railway Age*, July 2, p. 30.

In planning that railroad it was decided that dumping cars without uncoupling would be a logical solution if a suitable standard rotary coupler could be supplied. The same idea had been considered during the construction of the Quebec North Shore & Labrador, but had not been followed up.

In the early stages it was expected that the end of the car equipped with

the rotary coupler would have a special end casting, including the end sill, and special draft gear pocket which would allow for easy rotation of the coupler, yoke and draft gear. It was finally decided to use instead the standard center sill construction. This complicated the coupler design problem. National could approach it with the background provided by the design and production of thousands of Willison rotary couplers which for many years have been produced for industrial and mine cars.

Choice of a high tensile steel, and a new yoke-to-coupler connection made possible a National design which was accepted by Reserve Mining, and which today is operating successfully. Because these cars are

rarely uncoupled, and are not switched because they can be dumped in a coupled string, they are equipped with National M17A friction draft gears. This friction gear is adequate for road service, but would be unsuitable if it were necessary to separate and classify these cars with their 95-ton loads. While development work for most National products extends over three or four years, this new coupler was completed in a little over 12 months.

National has done a great deal of work with draft gears at higher coupling speeds to determine the effect on car and lading. Much experimental work and most recent draft gear designs have been aimed at problems introduced by today's freight train operation and car switching speeds. This work has yielded the term “impact quantum” with which National emphasizes the dynamics of operations involving today's freight cars. The Technical Center's proving ground and its test cars for train operation are doing work beyond that possible with laboratory testing equipment.

Round the World

An integral part of the Railway Division Sales is the Mine and Mill Section which started out in a small way some years ago, but is now recognized the country over as an authority on mine and mill transportation problems. National's sales in foreign countries have always been sizable, and in recent years a new International Division was formed. There is now a subsidiary company in Canada, too. In view of the tremendous growth in the countries south of us, licensee arrangements have been made in Mexico and South America. These licensing agreements have been made in other overseas nations, as well. The name “National Malleable” is becoming even more prominent around the world today.

Research at National was well summarized when it was said, “not wishing to live on accomplishments of the past, nor on successes of the present, National is constantly working, through its Technical Center, to provide even better draft gears, couplers and trucks for the future; to give even better impact protection to all rolling stock—and to passengers and lading.”

CENTER SIDINGS are used to pass trains or to cross a train from one track to another. Turnouts are designed for medium speed. Because the tonnage on most coal trains restrict them to this speed, the dispatcher often runs a coal train into the center siding to get it out of the way of a faster merchandise or passenger train. Thus a non-stop pass is made, and neither train loses time.



Either Way on Either Track

On double-track line center sidings and CTC enable dispatcher to detour trains around mechanized track gangs and cut overall running time

Increasing the production time of mechanized track gangs while reducing delays to trains detouring around these gangs is the result of extending a CTC installation throughout the Chesapeake & Ohio's Columbus-Toledo line. The dispatcher, from his CTC control board at Columbus, can direct trains to move by signal indication in either direction on each main track and the center sidings.

At Toledo, the C&O has extensive facilities for the transfer of coal from cars to lake boats, and for the transfer of ore from boats to cars. Four general types of shipments are handled between Columbus and Toledo: (1) coal, (2) iron ore, (3) merchandise, and (4) fruit. Coal moves north to Toledo; iron ore moves south to Portsmouth and Jackson, Ohio; fruit moves north to Toledo and Detroit; and merchandise moves both ways.

During an eight-month period in 1955, the C&O hauled 16,300,000 tons of lake coal, 6,000,000 tons of commercial coal and 1,540,000 tons of iron ore over this 114-mile Columbus-Toledo line. Three-unit, 4,500-hp diesel-electric locomotives, consisting of two cab units and a power unit, move these trains. Iron ore is handled in 100-car trains averaging

7,500 tons, and coal is shipped in 160-car trains averaging 12,500 tons. The main ore and coal movement is between Wednesday noon and Mon-

day morning from April through November, the Great Lakes shipping season.

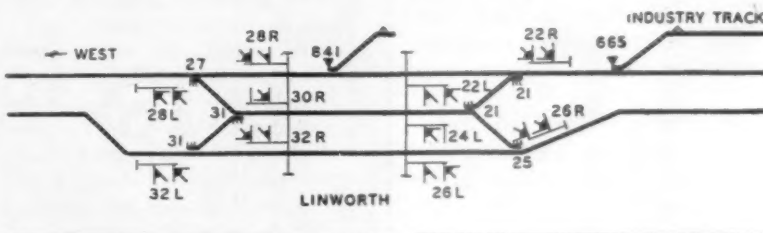
Three merchandise trains are oper-

CALL-ON FOR SWITCHING MOVES

Where conditions make it necessary, special "call-on" controls are provided either to permit a train to make a following movement into an occupied block or to make a back-up movement against part of the train left on the main track or in a center siding.

For example, a westbound train pulls into the center siding at Linworth. The locomotive cuts off with a car to be set out on the industry track (going through Crossover 31 normal and Switch 27 reversed, then Switch 27 normal and Crossover 21 normal).

After making the set out, the locomotive returns down the right-hand main passing Signal 28L. The dispatcher reverses Switch 27 and clears Signal 28L by pressing the "call-on" button and keeping it depressed while the control code is being sent to clear Signal 28L. The signal will then display the Restricting aspect (red over yellow), which directs the engineer to back down on his train. This would apply if the engineer had left his train on the main track, and had backed through the center siding to make the set-out.



ated each way daily; with coal, ore and fruit runs being made as extras, as traffic warrants. One passenger train is scheduled each way daily. Total traffic will average 20 trains daily, with a maximum of 30 during the peak shipping months in the summer when coal and ore movements are heavy. Maximum authorized speed is 75 mph for passenger trains and 50 mph for freights.

Remote Control Since 1950

During the thirties, automatic block signals were installed on this line, as well as center sidings for the passing of trains. To provide greater track utilization and improve train operations, remote control was installed in 1950. Power switches were placed at the ends of all sidings, and center sidings were signaled for train movements in either direction. Power switches and their

associated signals at the ends of sidings were controlled from a CTC-type machine in the dispatcher's office in Columbus.

Train operation was by signal indication, right-hand running. Occasionally traffic became so heavy that the dispatcher authorized trains to be run against the current of traffic on short sections, as between two siding locations. Such a move was authorized by a train order, and no more than one train could "reverse run" between adjacent sidings. To secure greater flexibility, CTC was installed between Delaware and Marion. In this 20-mile section the dispatcher could run trains on either track in either direction without resorting to train orders.

This remote control did a good job, except that the modern-day use of mechanized track forces with large on-track machines created an operating problem. Up to 10 years

ago, the track forces worked on the track for an hour or so, then had to clear for trains. More recently, track gangs were given a section for an entire day, and telegraph offices were set up to handle train orders for reverse running around the gang.

Today's Operations

Today, track maintenance is scheduled so that there are usually no more than two widely separated detours for track gangs in any one day. From April 1 through October 1, tie renewal and surfacing gangs are working, and from two to four weeks during this time, a Speno ballast cleaner, and a Sperry rail detector car will be on the line. Rail gangs also are on the line for about two to three weeks each year. These activities, along with two detours for track gangs, coming during the summer (Continued on page 50)

Railroading

After Hours

Substitute Service

One railroad which is making an intensive effort to get rid of unremunerative passenger trains has successfully tried something new in the way of "substitute service."

The principal opponents of the abandonment of a particular train were a couple of school-marms who used this train regularly. So the railroad bought the teachers a second-hand Ford and off came the train.

The president of the railroad involved, who told me of the incident, went on to explain that the railroads had often secured authority to abandon red-ink trains by providing substitute service by bus. So what's wrong with providing similar substitute service by private automobile, at far less cost?

Operations Research

I recently heard an explanation of this process which got down to the level of my non-mathematical understanding. The explainer was Dr. O. M.

by
James G.
Lyne



Editor,
Railway
Age

Solandt, the eminent Canadian scientist who has recently become assistant vice-president, research and development, of the CNR.

Dr. Solandt said that operations research simply means applying regular scientific methods to an entire process—instead of, as heretofore, to only some of the machines or operations which are a part of the process. He related a war experience—wherein the order was that shots be fired by a machine gunner in short bursts, in the unsubstantiated belief that the gunner's aim was accurate at the outset, but quickly wobbled.

Scientific study of the firing of the gun disclosed, however, that the gunner's aim improved as successive shots were fired—frequent non-firing intervals not improving the accuracy of the aim at all. The gun was the

product of scientific development, but the most effective use of the gun was not—until operations research got on the job.

It is, of course, an observable fact that lots of times costly machinery is installed to perform part of a job—when the job as a whole hasn't had nearly as much methodical study as has gone into one or two isolated machines or operations which are only contributors to the process.

Non-Autoist

On a Canadian National train the other day, heading from Montreal down toward Portland, Me., I fell into pleasant conversation with Stewart Holbrook, the well-known author and historian (including some substantial contributions to railroad history). Mr. Holbrook, long a resident of the other big Portland (Oregon, that is) was on his biennial visit to his native New England.

He does practically all his traveling by rail—has never owned an automobile, and has never even driven one.

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1956

Name of Road	Average mileage operated per period	Operating Revenues (thous. miles.)		Total and Deprec.		Operating Expenses		Operating Ratio		Net from operation		Net railway operating	
		1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
Akron, Canton & Youngstown.....	May	171	8515	8528	8530	871	875	86	868	859	868	845	859
Albany, Troy & Saratoga.....	5 mos.	171	2,548	2,601	2,661	351	358	28	308	325	346	248	266
Atchafalaya, Topeka & Santa Fe.....	May	13,124	42,627	43,528	50,451	48,191	8,100	6,957	7,277	9,664	33,709	5,232	5,960
Atlantic Coast Line.....	5 mos.	13,124	202,994	206,904	226,930	35,257	29,520	3,473	48,060	43,205	58,136	31,237	26,425
Atlanta & St. Andrews Bay.....	May	82	377	1	384	386	49	3	14	24	194	84	74
Atlanta & West Point.....	5 mos.	82	1,783	1,817	1,751	212	201	14	143	146	966	428	369
Baltimore & Annapolis.....	May	93	263	27	349	188	44	6	68	48	13	18	18
Baltimore & Annapolis.....	5 mos.	93	1,263	1,401	1,143	234	179	31	335	239	66	87	107
Western of Alabama.....	5 mos.	133	2,715	2,725	2,737	191	46	47	6	75	56	18	36
Atlantic Coast Line.....	5 mos.	133	1,468	1,377	1,812	1,228	259	39	364	288	91	96	87
Atlantic Coast Line.....	5 mos.	5,287	12,566	1,012	14,698	14,339	2,739	2,398	181	3,074	3,043	594	447
Atlantic Coast Line.....	5 mos.	5,287	61,289	8,561	76,183	70,788	12,953	11,358	800	14,970	14,950	2,196	27,668
Charleston & Western Carolina.....	May	343	640	652	537	158	114	12	113	116	42	20	191
Charleston & Western Carolina.....	5 mos.	343	3,379	3,431	2,471	756	655	88	552	529	211	101	915
Baltimore & Ohio.....	May	6,020	38,417	1,763	43,013	38,210	4,879	4,574	1,043	1,010	16,872	33,339	29,238
Baltimore & Ohio.....	5 mos.	6,020	175,659	7,717	195,207	165,721	21,583	18,812	2,572	43,443	30,399	5,142	4,951
Staten Island Rapid Transit.....	May	29	195	99	257	261	53	43	12	31	25	2	8
Staten Island Rapid Transit.....	5 mos.	29	985	296	1,300	1,242	269	214	59	148	125	9	707
Baugh & Arcoslovak.....	May	602	1,303	1,388	1,114	200	17	17	220	224	101	32	340
Baugh & Arcoslovak.....	5 mos.	602	8,263	8,333	6,565	1,759	1,500	82	1,303	1,304	506	132	410
Bremer & Lake Erie.....	May	208	3,621	3,657	2,862	217	173	17	1,260	572	140	30	573
Bremer & Lake Erie.....	5 mos.	208	10,138	1	10,257	8,179	1,465	856	288	4,508	2,767	697	144
Boston & Maine.....	May	1,574	6,141	768	7,733	7,165	989	950	131	992	850	209	131
Boston & Maine.....	5 mos.	1,574	28,956	4,138	37,154	34,308	5,182	5,066	713	4,950	4,685	1,054	719
Canadian Pacific Lines in Maine.....	May	234	464	521	445	131	127	13	152	117	17	8	177
Canadian Pacific Lines in Maine.....	5 mos.	234	3,690	202	4,021	3,683	609	515	107	711	87	41	1,532
Carolina & Northwestern.....	May	284	349	355	277	69	66	7	21	18	7	35	22
Carolina & Northwestern.....	5 mos.	284	1,676	1,709	1,384	319	305	31	93	87	158	176	406
Central of Georgia.....	May	1,764	3,433	3,838	3,744	581	595	29	596	600	158	808	804
Central of Georgia.....	5 mos.	1,764	16,570	806	18,826	18,165	2,819	2,699	225	2,854	2,924	764	868
Central of New Jersey.....	May	612	4,261	5,108	4,830	569	569	95	938	942	170	77	290
Central of New Jersey.....	5 mos.	612	21,238	2,389	25,393	22,985	3,209	2,895	476	4,574	4,100	375	2,900
Central Vermont.....	May	397	917	33	1,020	969	247	185	16	134	100	17	404
Central Vermont.....	5 mos.	397	4,124	296	4,780	4,521	820	809	80	602	539	54	83
Chesapeake & Ohio.....	May	5,132	34,194	633	36,703	32,747	4,076	3,960	401	5,683	5,621	1,447	753
Chesapeake & Ohio.....	5 mos.	5,132	158,038	2,815	168,787	144,766	19,007	17,320	1,968	27,877	24,901	3,869	56,132
Chicago & Eastern Illinois.....	May	868	3,713	1,855	3,150	2,746	364	353	27	512	501	136	142
Chicago & Eastern Illinois.....	5 mos.	868	13,771	1,016	13,444	13,585	3,209	2,895	157	2,801	2,591	182	2,353
Chicago & Illinois Midland.....	May	130	3,367	3,442	3,259	241	344	60	470	613	121	156	797
Chicago & Illinois Midland.....	5 mos.	130	14,300	1,307	17,257	16,210	2,984	2,715	305	3,303	2,889	862	797
Chicago & North Western.....	May	7,836	63,140	6,854	78,038	76,161	13,164	12,051	1,615	17,030	14,348	4,405	19,411
Chicago & North Western.....	5 mos.	7,836	289,938	1,855	315,042	295,985	40,909	36,462	2,000	21,025	19,637	4,555	38,031
Chicago, Burlington & Quincy.....	May	8,805	18,869	1,603	20,762	19,559	3,668	3,859	557	3,405	3,125	904	8,362
Chicago, Burlington & Quincy.....	5 mos.	8,805	73,906	1,306	79,925	76,581	13,454	12,343	1,188	16,362	15,950	4,405	16,950
Chicago Great Western.....	May	1,470	13,708	41	14,558	13,840	2,152	2,111	211	2,309	2,002	611	593
Chicago Great Western.....	5 mos.	1,470	58,190	1,171	61,701	59,625	4,996	4,396	931	9,349	9,370	931	536
Chicago, Mil., St. Paul & Pacific.....	May	10,541	84,498	6,094	100,928	93,789	16,462	15,522	2,000	21,025	19,637	4,555	38,031
Chicago, Mil., St. Paul & Pacific.....	5 mos.	10,541	389,938	1,855	431,042	409,985	40,909	36,462	2,000	21,025	19,637	4,555	38,031
Chicago, Rock Island & Pacific.....	May	7,597	13,627	1,360	16,411	14,982	2,326	2,214	192	2,862	2,551	582	546
Chicago, Rock Island & Pacific.....	5 mos.	7,597	66,127	6,107	72,752	69,459	10,767	9,859	1,140	13,463	12,343	1,188	16,362
Ohio, St. Paul, Minn. & Omaha.....	May	1,616	11,366	622	13,052	12,897	2,017	2,005	220	2,236	1,974	392	351
Ohio, St. Paul, Minn. & Omaha.....	5 mos.	1,616	58,190	1,171	61,701	59,625	4,996	4,396	931	9,349	9,370	931	536
Clinchfield Railroad.....	May	295	2,135	.....	2,145	1,405	307	245	19	404	308	95	57
Clinchfield Railroad.....	5 mos.	295	10,856	.....	10,912	7,016	1,412	1,012	96	1,848	1,249	474	281
Colorado & Southern.....	May	718	1,101	66	1,310	1,262	261	175	17	238	169	42	33
Colorado & Southern.....	5 mos.	718	5,369	311	6,011	5,693	834	42	137	110	133	212	187
Fl. Worth & Denver.....	May	1,362	6,974	661	8,505	8,566	1,245	1,868	140	1,409	1,317	234	338
Fl. Worth & Denver.....	5 mos.	1,362	34,129	341	37,121	36,593	4,993	4,577	27	3,402	3,147	262	2,811

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1956

Name of Road	Average mileage operated during period	Operating Revenues			Maint. Way and Structures and Deprec.			Operating Expenses			Net from railway operation	Railway Net income											
		Freight	Pass.	Total (inc. misc.)	Total	Retire-ments	1956	1955	Total	Traffic		Trans- portation	Total	Operating ratio	1956	1955							
Colorado & Wyoming.....	40	222	337	322	45	33	6	35	44	11	2	123	201	204	64.8	63.2	119	65	48	51			
Delaware & Hudson.....	5 mos.	1,047	1,167	1,436	1,401	148	12	165	174	55	8	638	1,021	920	60.9	61.0	655	364	272	223			
Delaware, Lackawanna & Western.....	5 mos.	792	1,707	1,403	2,582	252	252	3,503	3,811	863	474	7,993	15,334	15,263	64.2	72.5	8,128	4,023	4,118	3,443			
Delaware, Lackawanna & Western.....	5 mos.	962	2,624	7,701	6,977	831	140	1,170	1,026	328	294	3,691	6,330	5,440	82.2	78.0	1,371	4,035	4,842	796			
Denver & Rio Grande Western.....	5 mos.	29,657	3,963	36,958	33,400	4,079	3,843	686	5,434	5,088	1,630	969	17,977	30,286	26,968	82.0	80.7	6,673	2,220	3,631	2,783		
Denver & Rio Grande Western.....	May	2,155	6,282	200	6,692	6,305	927	905	1,003	930	287	214	1,967	4,410	4,205	65.9	66.7	2,282	1,010	1,360	1,207		
Detroit & Toledo Shore Line.....	5 mos.	2155	29,727	1,044	31,737	30,275	3,621	3,326	4,839	4,684	1,388	1,084	9,559	20,574	19,291	64.8	63.7	11,198	5,587	5,767	5,767		
Detroit, Toledo & Ironton.....	May	50	628	.....	673	693	41	79	4	68	80	21	18	415	409	51.5	59.1	1,260	84	61	489	
Duluth, Missabe & Iron Range.....	5 mos.	464	1,590	.....	1,764	1,731	339	250	34	339	269	92	56	1,445	1,259	71.4	60.5	297	267	267	377	
Duluth, Missabe & Iron Range.....	5 mos.	464	8,793	.....	9,147	8,526	1,496	1,261	1,746	1,156	455	275	2,308	6,206	5,011	67.8	58.8	2,941	1,179	1,532	1,938	
Duluth, South Shore & Atlantic.....	May	569	6,376	.....	7,479	6,340	497	457	80	676	521	138	10	1,895	3,244	2,737	43.4	42.4	2,234	505	3,691	3,133
Duluth, South Shore & Atlantic.....	5 mos.	544	652	3	685	703	161	183	10	107	140	24	28	533	1,968	1,921	89.8	85.6	1,353	1,186	137	484	
Duluth, Winnipeg & Pacific.....	5 mos.	317	3,607	10	3,111	3,433	926	612	52	645	661	120	146	231	2,602	2,322	80.4	83.5	1,311	91	189	73	
Duluth, Winnipeg & Pacific.....	5 mos.	175	3,023	3	3,055	2,438	357	302	22	397	347	11	30	1,286	2,111	1,793	69.1	73.5	1,605	144	235	233	
Elgin, Joliet & Eastern.....	May	236	4,146	.....	5,056	4,427	267	229	38	866	631	109	36	1,755	3,131	2,449	61.9	58.5	1,825	896	609	590
Elgin, Joliet & Eastern.....	5 mos.	236	19,722	.....	23,854	20,091	1,348	1,127	187	4,252	2,513	541	179	8,775	15,562	11,750	65.2	55.3	1,929	3,702	2,174	2,858
Erie.....	May	2,225	13,583	576	15,476	13,559	2,205	2,016	223	2,235	429	520	384	6,403	11,958	10,992	77.3	81.1	1,448	1,385	1,448	1,106	
Florida East Coast.....	5 mos.	2,225	64,553	2,820	72,425	63,829	7,941	7,119	1,105	10,225	10,435	2,513	1,929	31,608	56,099	50,365	77.5	78.9	16,326	6,492	6,328	5,788	
Florida East Coast.....	5 mos.	571	13,750	3,663	18,458	17,511	2,397	2,208	235	3,246	2,878	496	428	6,284	13,264	12,122	71.9	63.2	5,194	1,350	2,311	2,397	
Georgia Railroad.....	May	321	649	19	762	417	140	106	13	144	108	29	39	312	672	505	88.1	121.0	91	41	94	-72	
Georgia & Florida.....	5 mos.	321	3,244	79	3,778	2,373	660	482	57	697	512	162	191	1,552	3,286	2,363	87.0	99.6	492	206	456	37	
Grand Trunk Western.....	5 mos.	332	1,517	.....	1,543	1,319	466	363	17	194	151	41	101	44	1,288	1,065	83.5	80.7	255	84	57	76
Grand Trunk Western.....	5 mos.	931	23,828	1,075	26,915	25,818	3,242	2,759	276	4,719	3,756	470	416	13,059	22,471	19,860	83.0	73.8	4,444	1,851	128	614	
Great Northern.....	May	8,285	23,184	714	25,708	23,177	5,529	5,385	404	3,917	3,256	760	492	7,762	18,566	16,929	72.0	73.0	7,142	3,706	3,181	2,538	
Green Bay & Western.....	5 mos.	224	1,845	.....	1,884	1,839	405	283	21	233	187	46	114	326	250	81.3	70.6	75	38	12	30	
Gulf, Mobile & Ohio.....	May	2,757	6,449	326	7,239	7,339	1,158	1,136	73	1,412	1,319	280	288	2,261	5,508	5,228	76.1	71.2	1,731	784	644	1,316	
Gulf, Mobile & Ohio.....	5 mos.	2,757	31,015	326	34,903	34,560	5,281	5,281	377	6,613	6,440	1,418	1,443	11,968	20,685	23,615	74.7	71.6	8,818	3,784	3,129	4,468	
Illinois Central.....	May	6,532	21,309	1,681	25,471	24,604	4,077	3,736	384	4,291	4,023	792	587	8,933	18,985	17,835	74.5	72.5	6,496	3,379	2,584	2,658	
Illinois Central.....	5 mos.	6,532	102,057	7,362	122,724	118,488	18,744	16,814	2,082	20,908	19,664	3,944	2,924	44,402	92,392	86,361	73.3	72.9	30,332	15,943	11,302	12,155	
Illinois Terminal.....	May	355	1,021	31	1,052	1,021	1,021	1,021	21	172	181	40	49	401	865	782	72.6	78.9	327	121	156	79	
Kansas City Southern.....	5 mos.	355	4,562	161	5,363	4,634	662	632	109	967	782	210	234	1,960	4,163	3,761	77.6	81.2	1,290	480	500	318	
Kansas City Southern.....	May	891	3,610	79	4,020	3,892	417	388	46	465	517	92	97	1,160	2,275	2,170	56.6	55.8	1,745	842	674	703	
Kansas, Oklahoma & Gulf.....	5 mos.	891	17,635	468	19,769	18,324	1,830	1,760	223	2,384	2,160	42	40	496	982	894	67.3	53.9	8,557	3,945	3,350	3,348	
Kansas, Oklahoma & Gulf.....	May	327	479	.....	481	385	90	64	14	36	31	11	30	109	288	250	59.9	64.9	193	63	96	44
Lake Superior & Ishpeming.....	5 mos.	327	2,331	.....	2,440	1,972	377	289	52	155	151	56	150	543	1,337	1,202	57.1	61.0	1,003	370	444	268
Lake Superior & Ishpeming.....	May	149	629	.....	798	621	68	64	7	64	57	17	2	135	287	247	36.0	40.0	510	175	350	345
Lehigh & Hudson River.....	5 mos.	149	1,186	.....	1,468	1,012	241	245	35	383	319	86	11	390	1,105	957	75.3	94.6	363	304	138	-22
Lehigh & Hudson River.....	May	96	298	.....	299	272	34	36	2	33	33	8	16	99	197	183	65.9	67.2	102	44	22	29
Lehigh & Hudson River.....	5 mos.	96	1,365	.....	1,366	1,343	174	169	12	171	150	42	40	466	982	894	71.8	66.5	304	134	64	147
Lehigh & New England.....	May	178	762	.....	770	747	97	71	7	163	165	41	20	267	585	501	76.0	67.0	185	47	870	139
Lehigh Valley.....	5 mos.	178	3,107	.....	3,135	2,899	368	371	32	939	788	202	98	1,072	2,683	2,403	85.6	82.9	453	192	319	368
Lehigh Valley.....	May	1,150	5,789	228	6,294	5,791	845	822	101	948	1,033	83	148	2,722	4,902	4,654	77.2	80.4	1,392	454	762	1,909	
Litchfield & Madison.....	5 mos.	1,150	26,729	1,285	29,531	27,374	3,699	3,475	470	4,891	4,839	924	748	13,390	23,987	22,135	81.9	80.9	5,544	2,143	2,666	4,067	
Litchfield & Madison.....	May	44	333	.....	336	292	9	13	1	26	6	29	41	63	158	153	47.0	52.5	178	81	62	44
Litchfield & Madison.....	5 mos.	44	1,625	.....	1,650	1,414	53	63	4	123	127	29	213	318	809	763	49.0	54.0	181	353	265	217
Long Island.....	May	351	1,306	4,016	5,322	5,299	5,291	746	738	118	1,070	974	165	24	2,660	4,674	4,408	84.8	83.5	835	343	237	263
Louisiana & Arkansas.....	5 mos.	351	5,961	19,476	26,172	24,513	3,968	3,296	589	5,448	4,721	806	130	13,492	23,896	21,302	91.3	86.9	2,276	1,702	1,702	213	
Louisiana & Arkansas.....	May	746	2,185	50	2,344	2,286	263	223	26	307	270	93	82	682	1,420	1,259	60.6	55.1	924	343	483	500	
Louisiana & Arkansas.....	5 mos.	750	10,786	257	11,531	11,186	1,125	1,087	106	1,470	1,311	464	412	3,324	6,748	6,148	58.4	54.8	4,802	1,938	2,329	2,485	

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1956

Name of Road	Average mileage operated during period	Operating Revenues			Total			Operating Expenses			Net from railway operation	Railway tax accruals	Net railway operating income
		May	5 mos.	Total	1955	1956	Total	1955	1956	Total			
Louisville & Nashville.....	4,732	16,901	717	18,618	10,763	2,451	13,214	8,006	2,377	10,583	4,804	3,170	2,414
May	4,732	16,901	717	18,618	10,763	2,451	13,214	8,006	2,377	10,583	4,804	3,170	2,414
Maine Central.....	944	2,124	77	2,201	2,039	457	2,488	1,196	1,881	3,369	20,251	13,561	12,134
May	944	2,124	77	2,201	2,039	457	2,488	1,196	1,881	3,369	20,251	13,561	12,134
Minneapolis & St. Louis.....	1,397	1,993	3	2,000	1,672	257	1,927	1,397	1,937	3,334	3,066	1,393	2,345
May	1,397	1,993	3	2,000	1,672	257	1,927	1,397	1,937	3,334	3,066	1,393	2,345
Minneapolis, Northfield & Southern.....	77	1,733	390	2,123	1,385	96	1,481	1,003	1,334	2,337	2,002	1,192	738
May	77	1,733	390	2,123	1,385	96	1,481	1,003	1,334	2,337	2,002	1,192	738
Min., St. Paul & S. Ste. Marie.....	3,224	3,907	100	4,007	3,209	869	4,078	3,651	667	4,318	917	458	368
May	3,224	3,907	100	4,007	3,209	869	4,078	3,651	667	4,318	917	458	368
Missouri-Illinois.....	172	2,522	....	2,522	2,522	62	2,584	1,103	83	1,186	3,088	1,459	1,117
May	172	2,522	....	2,522	2,522	62	2,584	1,103	83	1,186	3,088	1,459	1,117
Missouri-Kansas-Texas Lines.....	3,241	5,474	220	5,694	5,822	986	6,808	4,903	1,005	5,908	1,097	450	285
May	3,241	5,474	220	5,694	5,822	986	6,808	4,903	1,005	5,908	1,097	450	285
Missouri Pacific.....	9,701	22,674	915	23,589	25,399	4,256	27,845	16,781	4,305	22,086	6,213	1,722	2,119
May	9,701	22,674	915	23,589	25,399	4,256	27,845	16,781	4,305	22,086	6,213	1,722	2,119
Monon.....	541	1,710	60	1,770	1,787	19	1,806	1,281	22	1,303	30,942	9,847	16,027
May	541	1,710	60	1,770	1,787	19	1,806	1,281	22	1,303	30,942	9,847	16,027
Monongahela.....	177	577	....	577	546	80	626	465	70	535	250	32	96
May	177	577	....	577	546	80	626	465	70	535	250	32	96
Naahville, Chatt. & St. Louis.....	1,043	2,679	92	2,771	1,502	574	2,076	1,383	240	1,623	1,139	70	458
May	1,043	2,679	92	2,771	1,502	574	2,076	1,383	240	1,623	1,139	70	458
New York Central.....	10,613	52,527	594	53,121	53,348	9,424	62,772	34,026	4,201	56,576	605	324	239
May	10,613	52,527	594	53,121	53,348	9,424	62,772	34,026	4,201	56,576	605	324	239
Pittsburgh & Lake Erie.....	221	4,967	56	5,023	4,042	490	4,532	305	77	4,837	1,159	1,002	1,136
May	221	4,967	56	5,023	4,042	490	4,532	305	77	4,837	1,159	1,002	1,136
New York, Chicago & St. Louis.....	2,178	14,527	151	14,678	13,801	1,781	15,580	10,279	1,903	13,682	3,226	2,240	1,949
May	2,178	14,527	151	14,678	13,801	1,781	15,580	10,279	1,903	13,682	3,226	2,240	1,949
New York, New Haven & Hartford.....	1,769	8,702	3,947	12,649	12,649	8,175	14,824	7,142	715	11,109	22,534	10,789	9,240
May	1,769	8,702	3,947	12,649	12,649	8,175	14,824	7,142	715	11,109	22,534	10,789	9,240
New York Connecting.....	21	392	....	392	385	120	505	25	17	22	188	99	78
May	21	392	....	392	385	120	505	25	17	22	188	99	78
New York, Ontario & Western.....	541	1,851	....	1,851	1,962	404	2,355	127	61	188	1,051	440	572
May	541	1,851	....	1,851	1,962	404	2,355	127	61	188	1,051	440	572
New York, Susquehanna & Western.....	120	1,933	....	1,933	2,328	2,640	271	272	28	292	1,177	211	803
May	120	1,933	....	1,933	2,328	2,640	271	272	28	292	1,177	211	803
Norfolk & Western.....	2,126	19,616	271	19,887	18,200	2,729	21,615	13,311	1,882	19,729	6,359	4,055	3,393
May	2,126	19,616	271	19,887	18,200	2,729	21,615	13,311	1,882	19,729	6,359	4,055	3,393
Norfolk Southern.....	604	4,232	....	4,232	4,191	954	5,145	2,499	259	2,758	2,632	1,807	1,483
May	604	4,232	....	4,232	4,191	954	5,145	2,499	259	2,758	2,632	1,807	1,483
Northern Pacific.....	6,865	14,091	540	14,631	15,219	2,721	17,352	10,310	9,458	13,311	2,658	1,408	1,532
May	6,865	14,091	540	14,631	15,219	2,721	17,352	10,310	9,458	13,311	2,658	1,408	1,532
Northwestern Pacific.....	329	1,273	....	1,273	1,324	244	1,568	108	108	216	1,137	600	1,06
May	329	1,273	....	1,273	1,324	244	1,568	108	108	216	1,137	600	1,06
Pennsylvania.....	10,006	71,973	10,088	82,061	80,573	10,103	92,676	48,900	1,433	94,109	18,260	6,676	29,421
May	10,006	71,973	10,088	82,061	80,573	10,103	92,676	48,900	1,433	94,109	18,260	6,676	29,421
Penn-Reading Seashore Lines.....	358	731	108	839	754	220	1,004	555	119	674	74,494	29,536	30,945
May	358	731	108	839	754	220	1,004	555	119	674	74,494	29,536	30,945
Piedmont & Northern.....	128	457	....	457	455	45	502	46	34	80	245	125	70
May	128	457	....	457	455	45	502	46	34	80	245	125	70
Pittsburgh & West Virginia.....	132	839	....	839	841	744	1,585	600	184	784	1,248	129	133
May	132	839	....	839	841	744	1,585	600	184	784	1,248	129	133
Reading.....	1,304	10,878	612	11,490	9,808	1,625	11,433	2,209	1,881	3,090	1,052	441	574
May	1,304	10,878	612	11,490	9,808	1,625	11,433	2,209	1,881	3,090	1,052	441	574
Richmond, Fredericksburg & Potomac.....	118	1,701	382	2,083	2,348	250	2,598	25	336	322	843	424	272
May	118	1,701	382	2,083	2,348	250	2,598	25	336	322	843	424	272
May	118	1,701	382	2,083	2,348	250	2,598	25	336	322	843	424	272

REVENUES AND EXPENSES OF RAILWAYS

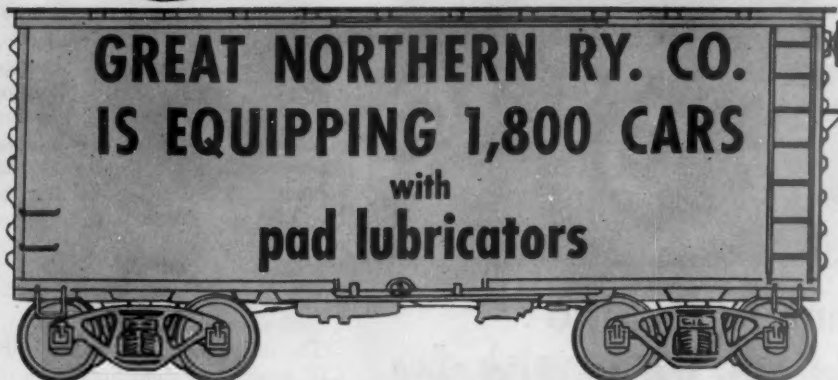
... in thousands: i.e., with last three digits omitted)

MONTH OF MAY AND FIVE MONTHS OF CALENDAR YEAR 1956

[illegible]



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One man, operating a modern Adams grader, drives via highway or along right-of-way to take care of scattered maintenance work without waiting to be transported by rail, and without need for a special crew. The grader goes to work immediately, cuts and cleans ditches, spreads ballast, widens shoulders, slopes banks, levels fill, builds grade for sidings, grades access roads, removes brush and weed growth, cleans up around stockpiles, water towers, coal docks, shops, yards, and does any other job required of it.

This modern grader is a big help in keeping maintenance up-to-date... fixes small troubles before they become major problems... saves expense and delays involved in postponement for work-train service.



Land, bordering track shoulders, can be leveled and cleaned regularly by a grader to maintain proper drainage. One man with an Adams slashes your payroll and machinery costs, saves time, eliminates sources of trouble before they develop.

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All Adams graders have 8 speeds forward, up to 25 mph (11 speeds including 3 optional "creeper" gears) and 4 in reverse to 13 mph for fast back-up in shuttle-grading.

Double-action hydraulic brakes assure quick, safe stops. When service brake on wheels is applied, brake holds transmission when it stops wheels. Machine won't slip.

Optional equipment adds to usefulness of grader. Scarifier rips out old asphalt, hard-packed dirt, roots, and stones. Dozer blade roots out brush, pushes debris off right-of-way, back-fills around culverts, cleans up spillage in yards. Snow plow and wing clear and spread snow in winter.

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A size ADAMS for every need

Model 220 — 60 hp, 14,865 lbs.

Model 330 — 80 hp, 20,500 lbs.

Model 440 — 104 hp, 21,500 lbs.

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AG-33-RR-1



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Railroad Sales Division
Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company



EITHER WAY

(Continued from page 44)

months when coal and ore shipments are heavy, create "an operating headache," which CTC relieves.

A major benefit from the CTC is the reduction in delays in detouring around the mechanized maintenance gangs. These gangs are also getting more work done, because they can now have a section of track for an entire day. The work train that accompanies these gangs is free to keep pace with the gang, or to go for material or set out cars.

Track and Signal Changes

The major work in extending the CTC was reverse signaling both main tracks. Dwarf signals at the ends of sidings were replaced with high signals. In most cases, the additional signals were mounted on existing signal bridges and cantilever brackets.

Some extra sidings were removed, leaving only the center sidings. New power crossovers were added between the two main tracks at several locations to provide flexibility for local freights, subject to the dispatcher's control. Most of the new crossovers are in or near concentrations of industry, saving local freight time.

Electric locks were installed on all main-track, hand-thrown switches. Three methods are used to obtain the release of electric locking, each depending upon local circumstances. They are: (1) release after a time delay with a long track circuit (1,000-3,000 ft) occupied; (2) release without a time delay with a short track circuit occupied; or (3) release by lever control by interlocking operator or dispatcher in addition to (1) or (2). At electric lock locations where local freights usually get in the clear for main-line trains, an automatic dwarf signal was installed to govern movements from the side track to the main line. After a through train has passed and the side track switch is reversed, the dwarf signal will automatically give the block indication (red, yellow or yellow over red aspect).

Engineering and installation were done by the C&O signal department, and the signal equipment was furnished by the Union Switch & Signal Division of Westinghouse Air Brake Company.

(Continued from page 13)
of the M-K-T of Texas at San Antonio, replacing E. L. Howard, retired. G. L. Stricklin appointed superin-



Frank J. Heiling



Elmer A. Bohmeyer



Tom C. Connally

tendent of terminals of the M-K-T of Texas at Houston, to succeed E. Busby, named agent for the Katy at Houston.

OBITUARY

Oswald A. Trudeau, 68, who retired as general passenger traffic manager, Canadian National, Montreal, died August 5.

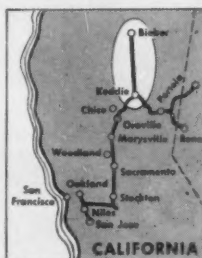
Running on rubber at speeds to 19 mph, Tournatractor has 3 times the speed of a comparable crawler-tractor, and it travels along ties, across tracks, without planking.



Tournatractor pushed several tons of rock over the bank. Says Operator Allen LeCone, "For cleaning a slide on a railroad in a hurry, this Tournatractor can't be beat."



How the Western Pacific cuts delays from slides in the mountains



Western Pacific Railroad Company, San Francisco, Calif., operates 1,528 miles of road in California, Nevada and Utah. This includes a 110-mile secondary main-line from

Keddie, Calif., to Bieber which provides, through its connection with the Great Northern, a route to the Pacific Northwest known as the "Inside Gateway".

Because much of the line is benched in on the side of the mountains, it is subject to earth slides during the rainy season and snow slides in winter. For fast emergency slide-clearing service, one of the units they have depended on since 1949 has been a high-speed rubber-tired Tournatractor.

Does job of work train

On the job pictured, Tournatractor worked with a Manitowoc shovel and a small scaling crew, trimming a large earth movement which threatened the tracks between Keddie and Moccasin Station. First, a fill of earth or gravel was laid between the rails to protect the roadbed. The slide is then blasted into small fragments which tractor and shovel remove and drop into the valley below.

Prior to adopting "off-track" operation and purchase of necessary equipment, the railroad used a fully-equipped work-train and crew to handle slide-clearing. It often took 2 hours time just to get the work-train

onto the main-line. Further time was lost travelling to the site. Train schedules were delayed. Because line is mainly single track, no traffic could go through until the work-train pulled into a siding, which might be several miles away.

Drives on roadbed to next job

Tournatractor, on the other hand, drives to a slide under its own power and is at work within minutes after slide occurs. Straddling the rails, Tournatractor drives over bridges and trestles, through tunnels. As soon as a slide is cleared, revenue traffic can roll with little or no interruption.

Railroad owners like Tournatractor because it doesn't interfere with train schedules, gets to the job sooner, and completes it faster. Besides it saves money. On the Western Pacific, Tournatractor and scaling crew can work for several days for a total cost of less than the expense of calling out a work-train for one day. Because of this saving in money and time, the Western Pacific bought a second Tournatractor.

Tournatractor is a dependable product of the earthmoving subsidiary of Westinghouse Air Brake Company. Ask us for all the facts so you can compare this rubber-tired tool with your present off-track equipment. It can save you time and money.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-701-RR-1

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Short Line Railroad Trainmaster capable of interpreting working agreements, handling crews, must have switching experience. Would prefer man who could direct picking up derailments if necessary. Give name of last employer, age and salary expected. Address replies to Box 802, RAILWAY AGE, 30 Church St., New York 7, N.Y.

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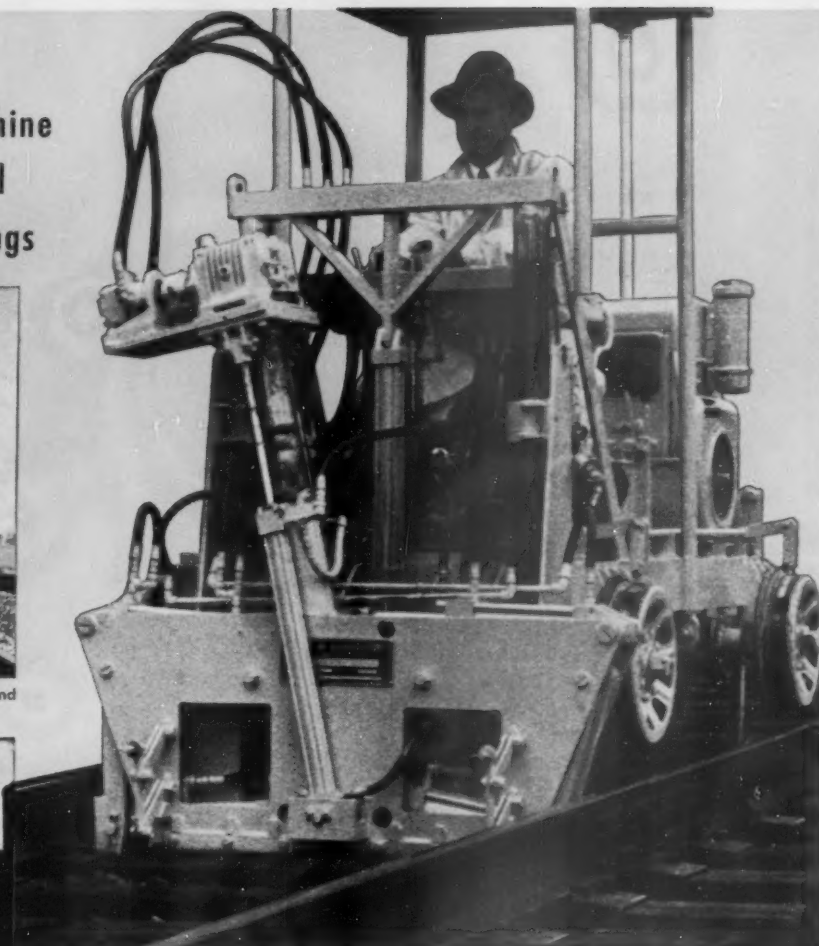
Lining tangent with target on machine and without retracting wheels.



Left wheels retracted to give man doing sighting clear view of the rail.



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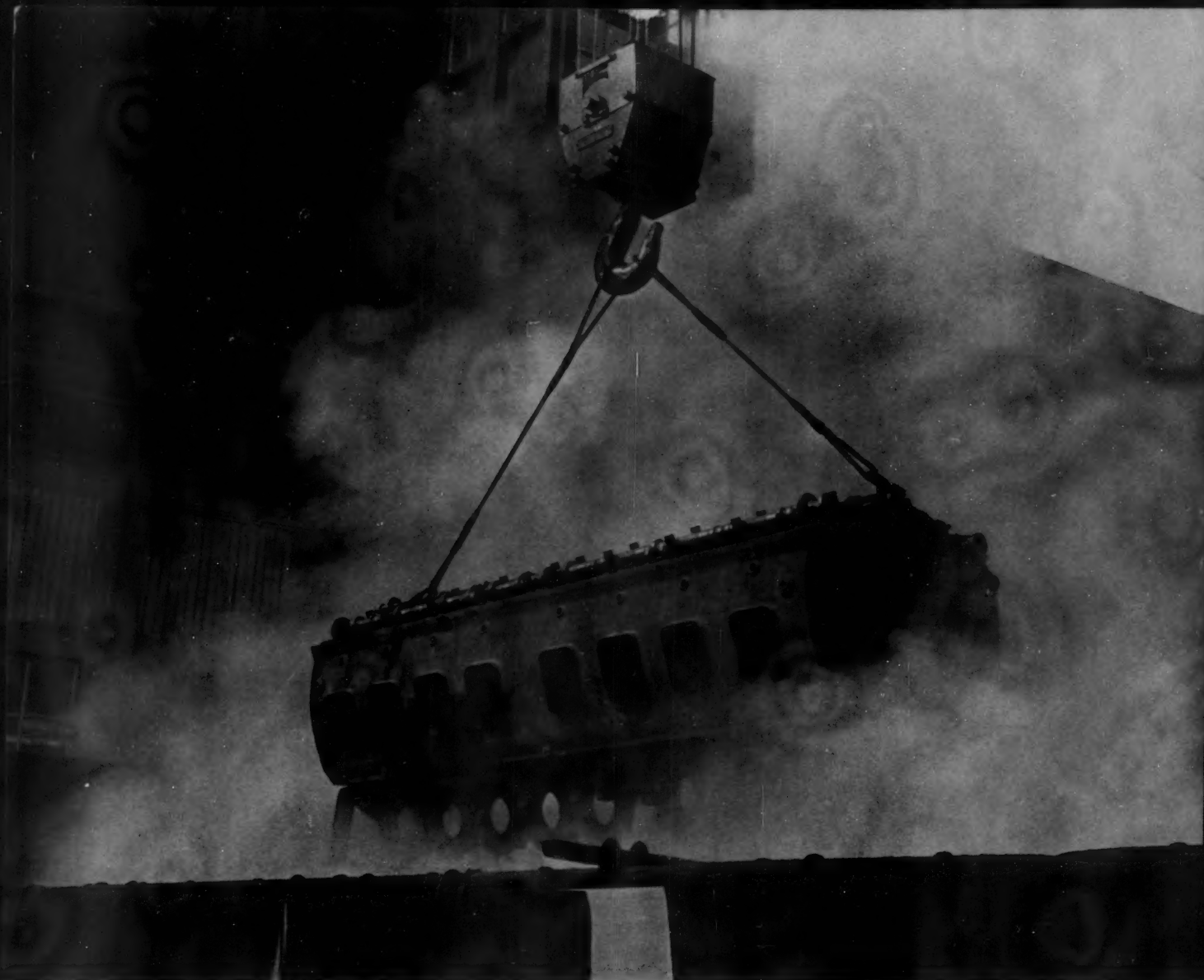
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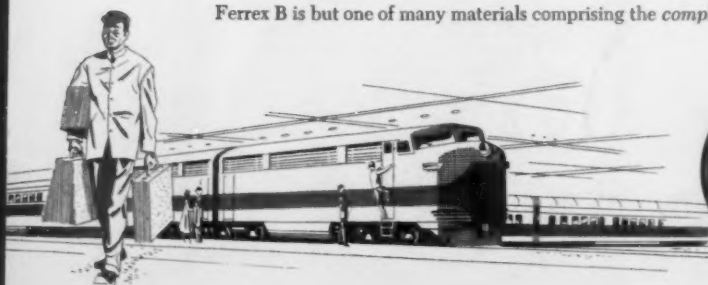
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